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ABSTRACT

Presented is the final report on Project Life (Language Improvement to Facilitate Education), a 12-year (1963-75) project which developed filmstrips and supplementary materials for teaching language to deaf children. General overview and historical review sections include information on project goals and objectives, administration agencies and associated individuals, and funding. Discussed is the rationale underlying the three instructional content areas: perceptual training, perceptual thinking, and language reading. The next three sections focus on a historical tracing of hardware development, marketing/dissemination, and evaluation of Project LIFE materials. Summarized in a final chapter on 1975 systems development accomplishments are the contents of a picture dictionary, 12 biography filmstrips, and 104 programed filmstrips on topics such as plants, health, and the universe. Appendixes include lists of Project LIFE field test centers, consultants, publications, research and evaluation studies, research and evaluation forms, and marketing and consultant critique information. (LS)

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FINAL REPORT
PROJECT LIFE
(1963-1975)

Conducted Under
CONTRACT NO. OEC-0-73-0608
Bureau of Education for the Handicapped
U.S. Office of Education
Department of Health, Education, and Welfare
Washington, D.C. 20202

Submitted by
The National Foundation
for the Improvement of Education
Washington, D.C. 20036

NOVEMBER 1975

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FINAL REPORT

for

Project LIFE

Office of Education Contract No. OEC-0-73-0608

Period Covered
June 18, 1963 through August 31, 1975

Submitted To
Elwood L. Bland
Project Officer and Chief
Learning Resources Branch
Division of Media Services
Bureau of Education for the Handicapped
U.S. Office of Education
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November 1975

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--FOREWORD--

PROJECT LIFE EVOLVED FROM A PLANNING PROJECT TO DEVELOP BETTER METHODS AND FACILITIES FOR TEACHING LANGUAGE TO DEAF CHILDREN. IT HAD A 12 YEAR HISTORY (1963-1975)AS FUNDED BY THE BUREAU OF EDUCATION FOR THE HANDICAPPED, U.S. OFFICE OF EDUCATION, DEPARTMENT OF HEW. HOWEVER, IT HAD A HISTORY OF RESEARCH AND PLANNING THAT DATED BACK INTO THE 1920's. IT WAS ADMINISTERED FOR THE FIRST NINE YEARS (1963-1972) BY THE NATIONAL EDUCATION ASSOCIATION, AND FOR THE NEXT THREE YEARS (1972-1975) BY THE NATIONAL FOUNDATION FOR THE IMPROVEMENT OF EDUCATION, WASHINGTON, D.C. THE GENERAL PURPOSE OF THE ENDEAVOR WAS TO SIGNIFICANTLY INCREASE THE LANGUAGE-LEARNING RATE OF PRELINGUAL DEAF CHILDREN, AND TO UPGRADE THE LANGUAGE SKILLS OF THE POSTLINGUAL DEAF AND THE SEVERELY HARD OF HEARING. THE OVERALL PLAN OF PROJECT LIFE WAS TO CAPITALIZE ON EXISTING RESEARCH, CONDUCT ADDITIONAL RESEARCH WHERE NECESSARY, DESIGN AND DEVELOP A COMPREHENSIVE LANGUAGE INSTRUCTIONAL SYSTEM, FIELD TEST THE SYSTEM UNTIL PREDETERMINED CRITERIA WERE ATTAINED, AND SUBSEQUENTLY DETERMINE AN APPROPRIATE MEANS FOR MARKETING THE SYSTEM, BOTH NATIONALLY AND INTERNATIONALLY. THE SYSTEM--BASED ON THE PRINCIPLES OF PROGRAMMED INSTRUCTION--WAS DESIGNED AND DEVELOPED. IT WAS COMPRISED OF MORE THAN 500 CORE FILMSTRIPS, AND INCLUDED A VARIETY OF SUPPORT COMPONENTS SUCH AS STORYBOOKS, SINGLE-CONCEPT PICTIONARIES, WORKBOOKS, INSTRUCTION MANUALS, AND OTHER RELATED SOFTWARE. THE MARKETER, THE GENERAL ELECTRIC COMPANY, PROMOTED AND DISSEMINATED THE PROJECT LIFE INSTRUCTIONAL MATERIALS AND, SIMULTANEOUSLY, PRODUCED AND MARKETED COMPATIBLE HARDWARE. DURING THE FOUR YEARS THAT THE PROJECT LIFE PROGRAM WAS MARKETED, THERE WERE MORE THAN $1,500,000 WORTH OF SALES, APPROXIMATELY TWO-THIRDS

OF WHICH WERE INSTRUCTIONAL MATERIALS. MORE THAN FIFTY PERCENT OF ALL PROGRAMS FOR THE DEAF IN THE U.S. PURCHASED THE SYSTEM; IN ADDITION, HUNDREDS OF INSTITUTIONS FOR THE MENTALLY RETARDED, EMOTIONALLY DISTURBED, DYSLEXIC, NEUROLOGICALLY IMPAIRED, CULTURALLY DEPRIVED, LEARNING DISABLED, NON-ENGLISH SPEAKING, AND NON-HANDICAPPED STUDENTS ACQUIRED THE PROGRAM. FURTHER, THE SYSTEM WAS SUCCESSFULLY EMPLOYED IN A VARIETY OF PROGRAMS FOR ILLITERATE AND BRAIN-DAMAGED ADULTS. THE PROJECT LIFE PROGRAM IS CONSIDERED BY MANY TO BE AN EXEMPLARY MODEL OF THE ACCOMPLISHMENT THAT CAN RESULT WHEN GIVEN A WELL-FOUNDED IDEA, A LONG-TERM COMMITMENT OF FEDERAL RESOURCES, EXCELLENT ADMINISTRATION, DEDICATED PERSONNEL, AND COOPERATION OF THE GOVERNMENTAL, PRIVATE AND COMMERCIAL SECTORS OF SOCIETY.

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PROJECT LIFE CHRONOLOGY

1925 - 1929: Basic Research in Language and Reading With Deaf Students, Columbia University

1929 - 1948: Project Conceptualization and General Planning
- A. Michigan Department of Special Education
- B. Michigan State School for the Deaf
- C. Council for Exceptional Children

1948 - 1962: Specific Planning and Goal/Objective Formulation
- A. National Education Association
- B. U.S. Office of Education
- C. Council for Exceptional Children

1963: Formal Project Inception
- A. Sponsor--U.S. Office of Education
- B. Administrator--National Education Association
- C. Beginning Date--June 18, 1963
- D. Project Headquarters--NEA, Washington, D.C.

1964 - 1968: Creation and Maintenance of Programming Centers to Design and Developmentally Test Instructional Media on Populations of Deaf Students
- A. Rochester School for the Deaf (Rochester, N.Y.)
- B. Ohio State University (Columbus)
- C. Our Lady of the Lake College (San Antonio, Texas)

1967: Creation of a Comprehensive National Field Test Network
- A. 1967-69: 10 Centers
- B. 1969-71: 102 Centers
- C. 1971-75: 52 Centers

1968: Consolidation of All Research and Development Activities into a Single Location

A. Location--National Education Association, Washington, D.C.

B. Beginning Date--September 1, 1968

1971 - 1973: Determine Commercial Viability of Project LIFE Program Through an Experimental Marketing Arrangement

A. Awarded to the General Electric Company After a Competitive Bidding Process

B. Beginning Date--April 16, 1971

C. Termination Date--August 31, 1973

1972: Change in Administration Agency

A. New Administrator--The National Foundation for the Improvement of Education (a Separate Non-Profit Tax Exempt Corporation Created by the National Education Association), Washington, D.C.

B. Beginning Date--September 1, 1972

1972: Formation of New Corporation

A. Name--Project LIFE, Inc.

B. Date of Incorporation--November 17, 1972

C. Purpose of Corporation--To Insure the Continued Development, Validation, and Dissemination of the Project LIFE Instructional Program as a Means of Benefiting Deaf and Hearing Impaired Individuals Subsequent to the Termination of Government Funding for Project LIFE Systems Development

1973: Inception of "Commercial Phase" of National and International Marketing

A. Awarded to the General Electric Company After a Competitive Bidding Process

B. Beginning Date--September 1, 1973

C. Termination Date--December 31, 1979

D. Marketer--Instructional Industries, Inc. (an Independent Affiliate of the General Electric Company), Ballston Lake, New York

E. Copyright Claimed Until December 31, 1979; Thereafter, All Instructional Media Developed Under Federal Support for Project LIFE to Enter the Public Domain

1973: Physical Relocation of Project LIFE Headquarters and Staff
A. Place--Gallaudet College, Washington, D.C.
B. Beginning Date--September 1, 1973

1973 - 1974: Creation of a National Dealer Network
A. Coordinator--Instructional Industries, Inc.
B. Magnitude--Approximately 25 Dealers
C. Purpose--To Market the General Electric/Project LIFE Program and Better Serve the Local Customers

1975: Contract Termination
A. Sponsor--Bureau of Education for the Handicapped, U.S. Office of Education
B. Termination Date--August 31, 1975

I. GENERAL OVERVIEW

Preface

In June 1963, the National Education Association contracted with the Bureau of Education for the Handicapped, U.S. Office of Education to conduct a planning project for the purpose of developing better methods and facilities for teaching language to deaf children. The contract pointed out that (1) such children acquire language with extreme slowness and therefore special means should be established for attacking those phases in which they encounter their greatest difficulties, (2) language must be better illustrated, with emphasis on its more abstract and subtle meanings, (3) that new approaches must be made in teaching words possessing multiple meanings, and (4) the deaf child's exposure to language must be increased.

The contract provided for an advisory committee, appropriate consultants, a staff, and the necessary facilities. The contract specified that determinations should be made on the kinds of materials and methods that could best be used, the characteristics of the vocabulary, the types of content materials, and the situations in which captioned films, teaching machines, and other special media could be adapted to contribute significantly to greater language progress by the deaf.

Why Better Facilities and Methods Were Needed

At the outset of the Project, numerous investigations were reported which showed that prelingual deaf children proceed through school from two to five years academically retarded. Such retardation stemmed largely from their difficulty in developing English language skills--an essential tool with which to acquire academic progress. Fingerspelling and printed language are the two most visually discrete mediums available to the deaf.

However, fingerspelling is primarily a personal or small-group communication medium, and, therefore something each school decides for itself whether to use. Printed language, on the other hand, is a universal medium that is used by all--a medium that can be supplemented either by speech, fingerspelling, or both.

Unfortunately, most printed materials used for the reading needs of young normally hearing children were deemed to be ill-suited to the language-learning needs of the prelingual deaf. Therefore, in the absence of any adequate materials for the task--either special or conventional--new facilities (and the methods for using them) were deemed to be needed.

General Intent and Design of the Project

The intent of the Project was to develop language-instruction facilities and methods of a supplementary type to:

1. Significantly increase the language-learning rate of primary- and intermediate-aged prelingual deaf children, and
2. Upgrade the language skills of the postlingual deaf and severely hard of hearing.

It was intended that the facilities and methods be designed to help do better what good teachers had long been doing in part. Good teachers had vitalized instruction by building it around experiences. They had utilized children's current interests and motivated new ones. They had illustrated and dramatized language meanings and concepts to build understanding of them. It was stated that these and all other good practices of teachers should be continued.

However, most teachers lacked the time and facilities for doing everything that was needed, particularly in the more essential and difficult aspects of language. As a result, several means were planned for simultaneous use which would, hopefully, accomplish the purposes of the Project. These were designed to:

1. Utilize carefully-selected words that would fit into the vocabulary lists of most schools for the deaf; that would relate to the child, his environment, and his probable experiences; and that would contribute substantially to greater balance in his language growth.
2. Present printed symbols of English in association with either illustrations or movie dramatizations that would relate those symbols as clearly as possible to the language meanings and concepts they represent.
3. Hold confusion for the child to a minimum by introducing and using a word in only one denotation or one connotation until that particular meaning was well established.
4. Increase individualized instruction through special programmed materials, motivate group interest and understanding through special captioned films, and enhance both types of instruction through the use of special published materials.

Minimum Acceptable Accomplishment

The profession had struggled for 150 years trying to develop better language instruction for deaf children. Methods had improved, teachers were better trained, and various devices had been developed and used. Thus, prior to the

inception of this Project, progress had been made. However, prelingual deaf children were still retarded academically. The profession was thus confronted with a problem in which plans for effective improvements could not be pursued casually. Any plan that anticipated producing results commensurate with the magnitude of the task required a vigorous, fully coordinated, simultaneous attack on all the serious aspects of the deaf child's problem.

This Project proposed to attempt the above by: (1) emphasizing concept development; (2) devising facilities to increase language exposures to the maximum practicable; (3) using ways for making those exposures much more meaningful; (4) giving special attention to function words, pronouns, adverbs, and various kinds of abstractions; (5) proceeding thoroughly with the instruction of the lexical, structural and other types of meanings; (6) gradating expansion in sentence complexity through structural-grammar principles; and (7) reducing the confusions that arise from the multiple-meaning words and expressions.

It was stated that nothing short of an exceedingly high degree of improvement in language learning would be considered satisfactory. The minimum acceptable progress by any prelingual deaf child was determined to be at least a fifty percent (50%) increase over the existing rate of growth for children of like abilities and aptitudes. However, it was contended that a fifty percent improvement was not enough. Therefore, in spite of the fact that the handicap of deafness can never be fully overcome, it was the hope and expectation of the first Project Director, Dr. Harley Z. Wooden, that follow-up research and experimentation would refine the facilities and methods used in this Project and thereby further reduce the existing gulf between the achievement levels of the young prelingual deaf and the young normally hearing.

Rationale for the Project

The rationale under which the Project operated was derived from what was considered to be the pertinent experience, investigative findings, and philosophical considerations of the profession. Following are a few of the conclusions. The reader will recognize some of these as excerpts, abstracts, or rephrased statements of such researchers and writers as Jerome Bruner, J.P. Guilford, Ann M. Mulholland, Helmer Myklebust, and others.

1. The limited exposures of the deaf child to language result in a retarded rate of development in his communication skills. In general, his greatest difficulties center around structural rather than the lexical meanings.

2. Language develops on the basis of experience, which the home and the school must provide the child an opportunity to acquire.
3. Experience should be categorized on the basis of concept development, rather than being subject-centered.
4. The sequence of man's experience in reaching the higher intellectual skills that are unique with him start with sensation and proceed through perception, imagery, symbolization, and concrete conceptualization to abstract conceptualization.
5. Vocabulary and language are highly dependent on concept formation, and the referent to which meaning is attached is significant and therefore must be clearly established.
6. The thinking skills are not only essential to the development of reasoning and critical thinking but are fundamental to the total learning of the child. They include abilities to:
   a. Recognize relationships among objects or events.
   b. Store information and recall it.
   c. Recognize logical order.
   d. Evaluate materials and information for quality, adequacy, and suitability.
   e. Do original thinking.
   f. Adapt the known to new situations.
   g. Do trial-and-error thinking.
   h. Acquire an understanding of various kinds of concepts.

Goals and Objectives

Initial planning and research centered on ways to improve language development and reading of children. Such an endeavor could not be pursued casually. The magnitude of the problem and the myriad of tasks associated with this type of effort, demanded a systematic approach. Program goals had been established and general objectives were stated to:

1. Emphasize concept development;

2. Introduce new words in a systematic sequence designed to make maximum utilization of them for acquiring understandings of subsequent instruction;

3. Devise materials and an interface between the child and the materials to increase the language exposures to the maximum practicable;

4. Devise ways for making those exposures much more meaningful than most traditional instruction, including well-illustrated or dramatized material for easier and quicker learning;

5. Give special attention to function words, pronouns, adverbs, and various kinds of abstractions;

6. Provide adequate concentration on words and concepts essential for comparing, contrasting, describing, and inquiring;

7. Proceed thoroughly with the teaching of the structural meanings, though also provide instruction in lexical meanings;

8. Gradually expand sentence complexity through structural grammar principles;

9. Reduce the confusions that arise from multiple meaning words and expressions; and

10. Provide adequate opportunities to develop receptive printed language skills through interesting story booklets and through other forms of instructional media, as rapidly as new vocabulary and language structures are learned.

Project Assumptions

Those who conceptualized Project LIFE realized that they were initiating an awesome undertaking when they set out to develop a mediated instructional program that would significantly reduce the language and reading problems of severely hearing impaired children. Several assumptions were made at the outset:

1. Single shot injections of instructional media, regardless of how effective they were, would make little difference in the lives of children. Rather, what was deemed necessary was a comprehensive array of media and materials that would be used on a daily basis by students over a period of several years.
2. Students differ in learning characteristics, experiences, needs, interests and motivation. Thus, any comprehensive program would have to be flexible to account for these *interindividual differences* - differences between one child and another.

3. Individual students have academic strengths and weaknesses and are in need of instructional media that are diagnostic-prescriptive in nature and that provide for multi-avenue learning. The Project LIFE program was thus conceptualized to have scores of student entry points, a broad scope of instructional materials in different areas, and several avenues for learning. In this manner, *intraindividual differences*, or the developmental discrepancies within the child himself, were accounted for.
4. Teachers will use an instructional system in a variety of different ways, depending upon their personal teaching philosophy, abilities of their students, specific objectives that they wish to accomplish, and the like. Therefore, it was decided to make the Project LIFE program as versatile as possible allowing for individualized/small group/large group instruction, receptive and expressive language practice, portability for use in different settings (classroom, library, home, dormitory, media resource room, etc.), alternative response modalities, and both print and non-print media.
5. The value of instructional materials, regardless of how much pedagogical rationale they seem to have, is minimal unless they are intrinsically motivating to children.
6. In order for materials to have maximum credence, they must be thoroughly tested on the ultimate user, the student.
7. The user--the student--must find the materials to be meaningful, interesting, challenging, functional, and enjoyable; otherwise, monies expended on material development are likely to be wasted and efforts fruitless.

Synopsis of Systems Development Accomplishments

All instructional materials comprising the Project LIFE Program can be dichotomized into "core" components or "support" components. The core components all fall into the medium of programmed filmstrips and can be categorized into one of the following four areas: (1) Perceptual Training Series (2) Perceptual Thinking Series, (3) Language Reading Series, or the (4) Social Studies Series. A total of 497 programmed filmstrips comprise the core area.

The support components can be grouped into filmstrip or print media. A total of 61 filmstrips make up the three reading series--Storyland Reading Experience Series (28 filmstrips), the Holidayland Reading Experience Series (21 filmstrips), and the Great People Reading Experience Series (12 filmstrips). Support components in the print medium include: (1)*The General Electric/Project LIFE Instruction Manual*,(2) six student "Funbooks," (3) four story books, (4) two teacher's guides, and (5) three single-concept pictionaries--*My LIFE Pictionary: Nouns, My LIFE Pictionary:Verbs*, and *My LIFE Pictionary: Multiple Meanings*.

A hierarchical listing of all instructional materials--both core and support components--is provided below.

Filmstrip Instructional Components

Perceptual Training Series

- Set 1, Set 2, Set 3, Set 4 (Pre-Reading)--30 Filmstrips

Perceptual Thinking Series

- Level I--Set 1 and Set 2 (Pre-Reading)--17 Filmstrips
- Level II--Set 3 and Set 4 (Pre-Reading)--17 Filmstrips
- Level III--Set 5 and Set 6 (Pre-Reading)--17 Filmstrips
- Level IV--Set 7 and Set 8 (Primary)--17 Filmstrips
- Level V--Set 9 and Set 10 (Primary)--17 Filmstrips
- Level VI--Set 11 and Set 12 (Primary)--17 Filmstrips

- Total Perceptual Thinking Filmstrips: 102

Language Reading Series

- Level I--Sets 1 through 8--55 Filmstrips
  Holidays I--5 Filmstrips
- Level II--Sets 9 through 16--59 Filmstrips
  Holidays II--5 Filmstrips
- Level IiI--Sets 17 through 24--59 Filmstrips
  Holidays III--6 Filmstrips
- Level IV--Sets 25 through 32--64 Filmstrips
  Holidays IV--8 Filmstrips
- Level V--Sets 33 through 40--64 Filmstrips

- Total Language Reading Series Filmstrips: 325

Social Studies Series

- Set 1, Set 2, Set 3, Set 4--40 Filmstrips

Reading Experience Filmstrips

- Storyland Reading Experience Series--28 Filmstrips
- Holidayland Reading Experience Series--21 Filmstrips
- Great People Reading Experience Series--12 Filmstrips

- Total Filmstrips in Reading Experience Series: 61

Grand Total Of Filmstrips In All Series: 558

Print Instructional Components

Pictionaries

- *My Life Pictionary: Nouns*
- *My Life Pictionary: Verbs*
- *My Life Pictionary: Multiple Meanings*

Story Books

- *The Bears*
- *Flying*
- *The Race*
- *The Parade*

Student Funbooks

- Student Funbook Ia (for use with Level I)
- Student Funbook Ib (for use with Level I)
- Student Funbook IIa (for use with Level II)
- Student Funbook IIb (for use with Level II)
- Student Funbook IIIa (for use with Level III)
- Student Funbook IIIb (for use with Level III)

Instruction Manuals and Teacher's Guides

- Comprehensive *Instruction Manual* Covering Entire General Electric/ Project LIFE Program
- Teacher's Guide for Storyland Reading Experience Filmstrip Series
- Teacher's Guide for Holidayland Reading Experience Filmstrip Series

II. HISTORICAL REVIEW

Administration Agencies and Associated Individuals

The contract for Project LIFE was initiated and administered for the first nine years (1963-72) by the National Education Association of the United States. The NEA as organized August 26, 1857, at Philadelphia, Pennsylvania under the title, The National Teacher's Association, has as its purpose, "to elevate the character and advance the interests of the profession of teaching and to promote the cause of education in the United States." In 1870, it became known as the National Educational Association, and in 1907, its present title was approved by its membership.

While under the administration of the NEA, the Supervising Officer for the Project was Dr. L. G. Derthick, Assistant Executive Secretary for Educational Services. Dr. Derthick held the former position of Commissioner of the U.S. Office of Education during President Eisenhower's second administration (1957-61).

From 1963 until 1969, the Project Director was Dr. Harley Z. Wooden. Prior to Dr. Wooden's position with Project LIFE, he was a teacher, principal, director of special education for the State of Michigan, and superintendent of the Michigan School for the Deaf, Flint. From 1949 through 1961, Dr. Wooden held the position of Executive Secretary, Council for Exceptional Children, Washington, D.C. The U.S. Office of Education Government Officer for the Project during this time (1963-69) was Dr. John A. Gough, Director, Captioned Films for the Deaf.

During the final three years of government funding for Project LIFE (1972-75), the activity was administered by the National Foundation for the Improvement of Education, Washington, D.C. "The Foundation was established in 1969 to improve the quality of education available to the citizens of the United States and other countries." The NFIE is a tax-exempt charitable and educational organization that was created by the NEA in order to further implement the NEA's commitment to advancing and improving the quality of education. Among the purposes of the NFIE are the promotion of programs that will improve the teaching and learning processes.

While under the administration of the NFIE, the Supervising Officer for the Project was Dr. James W. Becker, Executive Director. Prior to assuming the daily leadership with the NFIE, Dr. Becker had a history of some 25 years in the

field of education in which he held a variety of positions including teacher, principal, university professor, educational innovator and researcher. He founded and was the first Executive Director of Research for Better Schools, Inc., Philadelphia, Pennsylvania. During Dr. Becker's tenure with RBS, he created, validated, and demonstrated a truly individualized approach to the education of children.

From 1969 until 1975, the Director of Project LIFE was Dr. Glenn S. Pfau. Prior to Dr. Pfau's directorship, he held positions of electronics technician/engineer, teacher, medical and clinical audiologist, university professor, university institute/workshop instructor in educational technology, and educational researcher. His doctoral dissertation from Ohio State University (1967) focused on the area of programmed instruction with severely hearing impaired students. Dr. Pfau held the position of Assistant Director of Project LIFE from 1967 until 1969.

Dr. David A. Spidal worked for Project LIFE from 1967 through 1974, and held the position of Associate Director for the last five years of his association with the activity. He formerly was a teacher at the Oregon State School for the Deaf, Salem, and held other positions of speech pathologist, supervisor of a speech and hearing clinic, university professor, and special education consultant prior to his affiliation with Project LIFE. He terminated with the Project in August 1974 to assume the position of Principal, New York School for the Deaf, White Plains.

Subsequent to the retirement of Dr. Gough, the U.S.O.E. Project Officer was Dr. Gilbert L. Delgado, Chief, Media Services and Captioned Films, Division of Educational Services, Bureau of Education for the Handicapped. Dr. Delgado was the contract supervisor during 1969 and 1970. In 1971, he accepted the position as Dean of the Graduate School, Gallaudet College, Washington, D.C. The third and final U.S.O.E. Project Officer for the endeavor was Elwood L. Bland, Chief, Learning Resources Branch, Division of Media Services, Bureau of Education for the Handicapped.

At the termination of the government funding for Project LIFE, negotiations were underway with Gallaudet College, Washington, D.C., to take over all aspects of the activity under the administration of the College. Gallaudet indicated an interest in continuing the Project LIFE operation, with the necessary funding provided by the Gallaudet budget, grants/royalties from the sale of Project LIFE instructional materials, subcontracts, and foundation support. Gallaudet College is the only liberal arts college for the deaf in the world. A private, non-profit corporation, the College was established in 1864 to provide a liberal, higher education for deaf persons who need special facilities to compensate for their loss of hearing.

BEH/USOE Funding Pattern and Contract Identification

A listing of federal funds appropriated for Project LIFE from its inception on June 18, 1963 until its termination on August 31, 1975 is provided below:

National Education Association

1. Contract OE-3-19-007: June 18, 1963--Jan. 1, 1964	16,800	
2. Contract OE-4-19-070: June 15, 1964--Aug. 31, 1965	205,925	
3. Basic Contract OE-6-19-057: Sept. 1, 1965--Aug. 31, 1966	134,271	
4. Modification No. 1: April 1, 1966--Aug. 31, 1966	24,287	
5. Modification No.2: Sept. 1, 1966--Aug. 31, 1967	211,818	
6. Modification No. 3: Sept. 1, 1967--Aug. 31, 1968	209,340	
7. Modification No. 4: July 11, 1968--Aug. 31, 1968	65,810	
8. Modification No. 5: Sept. 1, 1968--Aug. 31, 1969	197,431	
9. Modification No. 6: June 23, 1969--Aug. 31, 1969	60,537	
10. Modification No. 7: Sept. 1, 1969--Feb. 28, 1970	160,000	
11. Modification No. 8: March 1, 1970--Aug. 31, 1970	194,156	
12. Modification No. 9: Sept. 1, 1970--Aug. 31, 1971	401,515	
13. Modification No. 10: May 10, 1971--Aug. 31, 1971	8,317	
14. Modification No. 11: Sept. 1, 1971--Aug. 31, 1972	395,889	($2,286,096)

National Foundation for the Improvement of Education

15. Contract OEC-0-73-0608: Sept. 1, 1972--Aug. 31, 1973	294,460	
16. Modification No. 1 (Research): June 1, 1973--May 31, 1974	29,940	
17. Modification No. 2 (Sys. Dev.): Sept. 1, 1973--Aug. 31, 1974	224,857	
18. Modification No. 3 (Combined): June 1, 1974--Aug. 31, 1975	198,936	($748,193)

GRAND TOTAL: $3,034,289

Locations of Project Headquarters

During the entirety of Project LIFE, it remained headquartered in Washington, D.C.; however, it had four different locations within the city. External to the nation's capital, the Project supervised three programming centers, several curriculum writers, artists, instructional material programmers, and two hardware development sub-contracts. The locations and addresses of the four Project headquarters follows:

1. June 18, 1963 through August 31, 1965

   National Education Association
   First Floor
   1201 Sixteenth Street, N.W.
   Washington, D.C. 20036

2. September 1, 1965 through November 30, 1970

   National Education Association
   Annex Building
   Third, Sixth, and Seventh Floors
   1507 M Street, N.W.
   Washington, D.C. 20036

3. December 1, 1970 through August 31, 1973

Coyne Building
Ninth Floor
1156 Fifteenth Street, N.W.
Washington, D.C. 20005

4. September 1, 1973 through August 31, 1975

Gallaudet College
College Hall--Third Floor
Seventh and Florida Avenue, N.E.
Washington, D.C. 20002

Phases of the Project

The Project's contract with the U.S. Office of Education,covering a span of some 12 years, was divided into three phases. The divisions were based upon different areas of emphasis. The phases were as follows:

Phase I

Encompassing Dates: June 18, 1963 through December 31, 1963

Identifying Name: Planning Project to Improve Language Development of Deaf Children

Purpose: To implement certain elements of Public Law 87-715, it was proposed that a project be systematically planned which would develop better methods and facilities for teaching language to deaf children. The "planning phase" was necessary to double check each step of the original proposal for completeness of coverage and maximum practicability.

Phase II

Encompassing Dates: June 1, 1964 through August 31, 1975

Identifying Name: Project LIFE--Language Improvement to Facilitate Education and Life Opportunities of Children with Severe Hearing Impairments

Purpose: To evaluate and field test a variety of different types of programming techniques, production methods, photographic processes, and student self-instructional response devices. Also, by means of six week summer institutes for teachers of the deaf (1964 and 1965), produce the necessary language development outlines to be used by the Project material design specialists. These were identified as *Language Curriculum--First Level* (1964), and *Language Curriculum--Second Level* (1965).

Phase III

Encompassing Dates:

Phase III: Year One--September 1, 1965 through August 31, 1966

Phase III: Year Two--September 1, 1966 through August 31, 1967

Phase III: Year Three--September 1, 1967 through Aug. 31, 1968

Phase III: Year Four--September 1, 1968 through Aug. 31, 1969

Phase III: Year Five--September 1, 1969 through Aug. 31, 1970

Phase III: Year Six--September 1, 1970 through Aug. 31, 1971

Phase III: Year Seven--September 1, 1971 through Aug. 31, 1972

Phase III: Year Eight--September 1, 1972 through Aug. 31, 1973

Phase III: Year Nine--September 1, 1973 through Aug. 31, 1974

Phase III: Year Ten--September 1, 1974 through Aug. 31, 1975

Phase III (Continued)

Identifying Name: Project LIFE--Language Improvement to Facilitate Education of Hearing Impaired Children

Purpose: To produce or adapt the necessary instructional materials, related equipment, and methodology for improving the language skills of severely hearing impaired children. A second and concomitant purpose was to thoroughly field evaluate the system on a representative target population of subjects to insure that the materials attained their behavioral objectives; all detected weaknesses in the system were to be corrected.

Trademark "Project LIFE"

The trademark, "Project LIFE," was first used in association with educational services--namely, for conducting conferences, meetings, workshops, and symposia--at the beginning of the FY 1965 contract year (September 1, 1964). The trademark was first used in association with various types of instructional materials--namely, filmstrips, manuals, workbooks, transparencies, story books, and dictionaries--at the beginning of the FY 1966 contract year (September 1, 1965). It continued to be used through the termination of the government contract for the endeavor (August 31, 1975).

The Project LIFE instructional materials and related equipment were first marketed on April 16, 1971, by the General Electric Company. The mark, "Project LIFE," began to be recognized nationally and was soon identified in the field of deaf education as a name synonymous with materials that were carefully designed, excellently produced, and thoroughly field tested. It was then decided that the credibility of the name should be protected in the future by means of registration.

In early 1972, Dr. Glenn Pfau, Director of Project LIFE, made contact with Morton W. Bachrach, USOE Copyright Officer, and Norman J. Latker, an attorney with the USOE General Counsel's Office regarding the registration of the Project LIFE trademark. They concurred that the name should not be registered with the U.S. Office of Education, but rather with the National Education Association, the National Foundation for the Improvement of Education, or with the Project LIFE administrators directly.

In May 1972, after discussions with Dr. James W. Becker, Executive Director of NFIE, Dr. Pfau made contact with the Law Office of Holman & Stern, Patent and Trademark Counsellors, 2410 Fifteenth St., N.W., Washington, D.C. 20009. Marvin R. Stern recommended that an immediate application for trademark registration be filed, and it be submitted on behalf of the National Education Association. The application for registration was filed by the National Education Association on July 5, 1972, and signed by Allan M. West, Deputy Executive Secretary, NEA.

The registration for application was approved with the original Certificate of Registration No. 975,523 issued on December 25, 1973. The letter from the Patent Office of the United States read as follows:

> This is to certify that from the records of the Patent Office it appears that an application was filed in said Office for registration of the Mark shown herein ("Project LIFE"), a copy of said Mark and pertinent data from the Application being annexed hereto and made a part hereof.
>
> And there having been due compliance with the requirements of the law and with the regulations prescribed by the Commissioner of Patents.
>
> Upon examination, it appeared that the applicant was entitled to have said Mark registered under the Trademark Act of 1946, and the said Mark has been duly registered this day in the Patent Office on the PRINCIPAL REGISTER to the registrant named herein (National Education Association).
>
> This registration shall remain in force for Twenty Years unless sooner terminated as provided by law.
>
> In Testimony Whereof I have hereunto set my hand and caused the seal of the Patent Office to be affixed this twenty-fifth day of December, 1973.
>
> Rene D. Tegtmeyer
> Acting
> Commissioner of Patents

United States Patent Office

975,523
Registered Dec. 25, 1973

PRINCIPAL REGISTER
Trademark
Service Mark

Ser. No. 429,148, filed July 5, 1972

PROJECT LIFE

National Education Association
(District of Columbia corporation)
1201 16th St., N.W.
Washington, D.C. 20036

For: FILMSTRIPS, INSTRUCTIONAL MANUALS, WORKBOOKS, TRANSPARENCIES, STORY BOOKLETS, AND DICTIONARIES, in CLASS 38 (INT. CL. 16).
First use Sept. 1, 1965; in commerce Sept. 1, 1965.

For: EDUCATIONAL SERVICES--NAMELY CONDUCTING CONFERENCES, MEETINGS, WORKSHOPS AND SYMPOSIA FOR INSTRUCTING TEACHERS AND RELATED EDUCATORS IN THE LANGUAGE ARTS AND IN UTILIZATION OF THE INSTRUCTIONAL MEDIA, in CLASS 107 (INT. CL. 41).
First use Sept. 1, 1964; in commerce Sept. 1, 1964.

NOTICE: The Registration will be canceled by the Commissioner of Patents at the end of six years following the date of registration (December 25, 1979), unless within one year next preceding the expiration of such six years (December 25, 1978), the registrant file in the Patent Office an affidavit showing that said mark is still in use or showing that its nonuse is due to special circumstances which excuse such nonuse and is not due to any intention to abandon the mark.

Trademark Contention by Time, Incorporated

During the first quarter of the 1975 calendar year, certain elements of the registered trademark "Project LIFE" were questioned by Time, Incorporated, Time & Life Building, Rockerfeller Center, New York, New York 10020. The correspondence, as originally addressed to the Project LIFE marketer, the General Electric Company, was referred to the National Foundation for the Improvement of Education for a response.

Drs. Becker and Pfau conferred with Marvin R. Stern, Patent and Trademark Counsellor, Washington, D.C., who in turn communicated with John D. Diamond, Esquire, Assistant Counsel, Time, Inc. Time, Inc., was concerned that the trademark "Project LIFE" could be confused with its registered mark, particularly if the work "LIFE" were used in block form with the word "Project" appearing perpendicular and adjacent to the letter "L."

It was explained in writing to Time, Inc. (April 16, 1975), that Project LIFE had been funded by the government since June, 1963, and that all government funding for the activity would terminate on August 31, 1975. Further, there were a large number of filmstrips and other materials already bearing the mark in the form to which they objected, and that Project LIFE was under contract to produce some additional materials between the time of the correspondence and August 31, 1975.

NFIE requested permission from Time, Inc., to continue to use the trademark in the same form (that was questioned by Time, Inc.) on the additional materials to be produced in the FY 1975 contract year, and to have the right to continue to use those materials already produced which contained the trademark in that form, including the right to reproduce earlier filmstrips from time to time (subsequent to August 31, 1975) as they were called for. However, NFIE consented to have both words "Project LIFE" of the same size on all new materials produced after September 1, 1975. NFIE further stated that although the word "Project" may include lower case letters, where the word "life" is all in capitals, block form would not be utilized except in those instances in which it would otherwise be impractical or inconvenient, such as in typewritten form.

On April 18, 1975, John D. Diamond of Time, Inc., replied in writing that Time, Inc., had no objection to NFIE's proposed use of the trademark "Project LIFE" provided that after September 1, 1975, all materials utilizing the trademark would have both words of the same size and that where the word "life" is in all capitals, block form would not be utilized, except where typewritten form was involved.

Subcontracts

Over the duration of the government funding period, Project LIFE had a variety of subcontracts with different organizations. All of the significant subcontracts fell into one of two categories: (1) centers to design and test instructional materials for deaf children, or (2) organizations to design and develop instructional devices compatible with the LIFE materials. In addition, the Project entered into numerous contracts with individuals for the purpose of designing, illustrating, producing, and/or evaluating instructional materials.

The Project's instructional design subcontractors, known as "programming centers," were: (1) The Rochester School for the Deaf, 1545 St. Paul Street, Rochester, New York 14621; (2) The Ohio State University Research Foundation, acting for and on behalf of The Ohio State University, 154 North Oval Drive, Columbus, Ohio 43210; and (3) Our Lady of the Lake College, Harry Jersig Speech and Hearing Center, 411 Southwest 24th Street, San Antonio, Texas 78207.

The Project's hardware subcontractors were: (1) Viewlex, Inc., Holbrook, Long Island, New York 11741; and (2) John Tracy Clinic, 806 West Adams Blvd., Los Angeles, California 90007.

The purpose of the programming centers were to:

1. Design and develop programmed language lessons for primary-level children with severe hearing impairments;

2. Provide the necessary art and clerical work to prepare the materials for developmental testing; and

3. Test the materials frame-by-frame with children enrolled in a school for the deaf and make the necessary modifications based on testing results.

The programming centers are listed below along with the dates and the amounts of the subcontracts.

1. The Rochester School for the Deaf

- June 15, 1964 to August 31, 1965 $ 12,313

II. The Ohio State University

• June 15, 1964 to August 31, 1965	19,440
• September 1, 1965 to August 31, 1966	39,889
• September 1, 1966 to August 31, 1967	52,060
• September 1, 1967 to August 31, 1968	53,092
TOTAL:	$164,481

III. Our Lady of the Lake College

• September 1, 1965 to August 31, 1966	19,573
• September 1, 1966 to August 31, 1967	30,194
• September 1, 1967 to August 31, 1968	53,092
TOTAL:	$102,859

Viewlex, Inc., designed and developed two prototype teaching machines and, subsequently, eighteen (18) field test models to be compatible with the proposed Project LIFE instructional materials. The machines had provisions for both constructed and multiple choice student responses. They were capable of projecting filmstrip or 8mm movies onto built-in screens. In addition, an enclosed tape player was capable of providing sound in synchrony with either visual medium. Limited field testing of the device indicated that there were far too many inadequacies to seriously consider a production model of the Viewlex-produced machine. Many elements of the device, however, served as a basis for a much improved model produced by the John Tracy Clinic. After constructing four prototype models, the John Tracy Clinic produced 200 field test versions. This model served as the bases for the later production model produced for Project LIFE by the General Electric Company.

The hardware development centers are listed below, along with the dates and the amounts of the subcontracts.

I. Viewlex, Inc.

• June 15, 1964 to August 31, 1966	$ 75,000
• September 1, 1965 to August 31, 1966	9,395
• September 1, 1966 to August 31, 1967	36,022
• September 1, 1968 to August 31, 1969	20,106
TOTAL:	$140,523

II. John Tracy Clinic

• September 1, 1968 to August 31, 1969	$35,840

Though not a subcontract, Project LIFE had a great deal of production and photographic business through the years with Ralph Lopatin Productions, Inc., 1728 Cherry Street, Philadelphia, Pennsylvania 19103. In addition, during fiscal year 1970 (September 1, 1969--August 31, 1970), Project LIFE administered and coordinated an extension of its programming activities at the Oregon State School for the Deaf, 999 Locust Street, Northeast, Salem, Oregon 97310. OSSD designed, programmed, and field evaluated a series of 20 programs which employed the principles of transformational grammar to teach certain question forms and develop basic expressive language ability in young, severely hearing impaired children.

III. Instructional Product Development

The bulk of the Project LIFE instructional materials falls into the core areas of (1) Perceptual Training, (2) Perceptual Thinking, and (3) Language Reading. This chapter will deal with the rationale underlying these content areas. For a listing and description of the support components, as well as more information regarding the areas covered in this section, the reader may review Chapter I and Chapter VII of this report or the *General Electric/Project LIFE Instruction Manual.*

The perceptual materials are designed to correspond with the major period of perceptual growth--a chronological age of two to seven years. The perceptual thinking materials are designed to begin with children as young as five years of age and spiral upward in difficulty to challenge children in the early elementary grades. The large body of language/reading materials are intended for children who are ready to begin formal reading instruction and progressively increase in difficulty through the first five reading grade levels.

All Project LIFE materials are prepared with specific *behavioral objectives* and corresponding *tests* to measure the degree to which the stated objectives are realized. In addition, each programmed filmstrip has a *purpose statement* to provide the teacher with a cogent idea of the intent of the program.

Each programmed filmstrip builds upon instructional concepts previously learned. For example, in the Language/Reading Series, the vocabulary and syntactical structures are gradually increased in difficulty to correspond with the child's needs as (s)he progresses through the elementary years.

Perceptual Training Series

The LIFE Perceptual Training Series is based upon more than two hundred research investigations which have pinpointed particular areas of perceptual processing (visual) which have been found to be closely related to the skill of reading graphic symbols (words). Deficient or inadequate sensory experiences in these skill areas have been found to contribute to perceptual deprivation and, subsequently, reading retardation.

The psychological function of perception is defined in various ways by different users of the term. Perception might technically be defined as the "over-all activity of the organism that immediately follows or accompanies energistic impingements upon the sense organ." That is to say, perception is that process by which impressions observed through the sense organ are transmitted to the brain where relationships to past experiences take place. Viewed in a different way, perception is the bridge between the individual and his environment.

It has been found that a large number of children are behind in the development of their visual perceptual skills. Such a child is disadvantaged since he is unable to perceive his environment in a stable and predictable fashion.

In order to achieve normal perceptual growth during the critical period (generally defined between the ages of two and seven years), it is important to provide training activities for specific visual areas. The literature in the field of reading identifies several visual skills which appear to be closely related to success in reading. These skills include the perceptual areas of discrimination of forms, configurations, colors, letters, substitutions, deletions, spatial orientation, shape, size, and figure-ground. All of these are covered in the LIFE Perceptual Training Series.

Specifically, the LIFE perceptual materials are designed to assist the student in the development of perceptual abilities in vision. The perceptual tasks are visual in nature and provide the student with an opportunity to make a motoric response to indicate his/her perceptual experience. The two visual perceptual processes involved are association tasks (matching one item to another) and discrimination tasks (choosing which item is different from a series of items).

In the LIFE Program, perceptual training does not call for symbolic responses such as naming, acting, interpreting or the like. It represents, rather, the ability of the child to see differences and similarities in various perceptual skill areas.

Perceptual training is directed toward the development of perceptual efficiency and perceptual constancy in each child. In our physical environment, perception is not an isolated process but generally occurs simultaneously with, and dependent upon, language and thinking. It is the process which gives consistent meaning to that which is observed and those stimuli impinging on the sense organ.

The major period of perceptual growth occurs between the ages of two and seven years. If there is perceptual deprivation during this critical growth period, it is generally agreed that there may be severe negative effects. The GE/LIFE Perceptual Training Series was designed to insure that there would be normal visual perceptual growth during this critical period. Simultaneously, the Series is intended to insure that each student will have the necessary visual perceptual prerequisites required to experience success in reading.

The lack of these skills has been found to be closely related to many different types of reading difficulties. The Series was designed to assist in the development of those particular skills at the pre-reading level needed for normal reading development. In addition, this Series may also be used for remediation of specific visual perceptual problems detected in older students.

Perceptual/Thinking Series

The Project LIFE Perceptual/Thinking Series is designed to bridge the gap between the Perceptual Training Series and the Language/Reading Series. The basic purpose of the Perceptual/Thinking Series is to provide the student with multiple relevant opportunities to practice the various intellectual tasks which contribute to the normal development of cognition, memory, convergent thinking, and evaluation. Some of the sub-tasks programmed within the series include: memory, sequencing, classification, evaluation, transformation, association, maze tracing, visual/conceptual closure, analogies, relationships, and inferences.

Within each of the classifications listed above, there are frequently several subdivisions. For example, the area of memory is divided into the tasks of memory for color, pictures, objects, figures, position, letters, numbers, words, directions, and signs, among others. Furthermore, each of these subdivisions are programmed at different levels of complexity.

Perceptual/thinking skills are those cognitive activities deemed essential to the development of reasoning and critical thinking while at the same time being fundamental to the total learning of the student. There appears to be a universal recognition that in this period of rapid change (i.e., situations, task requirements, subject matters, technology, social relationships), the human thinking requirements remain relatively the same and vary only marginally within certain parameters. Intelligent human behavior requires scores of different cognitive skills and/or competencies. Among others, critical thinking requires the abilities to:

1. Recognize relationships among objects or events;

2. Store information and recall it;

3. Recognize logical order;

4. Evaluate materials and information for quality, adequacy, and suitability;

5. Do original thinking;

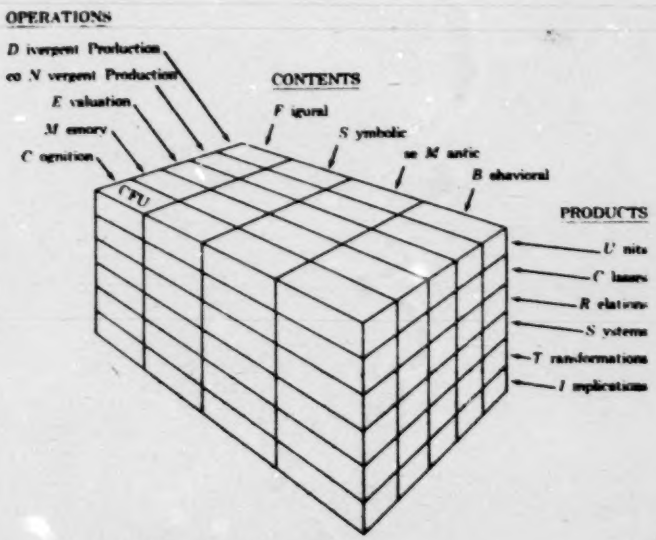
6. Adapt known problem solutions to new situations;

7. Do trial-and-error thinking; and

8. Acquire an understanding of various kinds of concepts.

The acquisition of abilities such as these depends on the cognitive learning process. Cognition, as a learning process, may be viewed as a variety of learning abilities which range from simple memory through convergent and divergent thinking to the highest levels of evaluation and judgement. As a student grows, he becomes increasingly able to handle these intellectual requirements, dealing with them first as units and classes, and progressively later as relations, systems, transformations, and implications.

SOI Model. J. P. Guilford in the book, *The Nature of Human Intelligence* (1967) presents a theoretical model of intelligence. In the model, he lists five OPERATIONS: *cognition, memory, evaluation, convergent production,* and *divergent production.* These skills, also called processes, are further divided into PRODUCT areas and CONTENT areas. The PRODUCT areas include *units, classes, relations, systems, transformations,* and *implications.* The CONTENT areas include *figural, symbolic, semantic,* and *behavioral parameters.* The cube as modified by Meeker (1969) is shown in the figure below.



Structure of Intellect Cube. (Printed With Permission From Mary L. Meeker, The Structure of Intellect: Its Interpretation and Uses. Charles E. Marrill Publishing Co., Columbus, Ohio, 1969.)

The model above seems to combine the various learning abilities into a coherent working structure. This theoretical model of intellectual abilities is the product of the factor-analytic research conducted by Guilford and his associates at the Psychological Laboratory, University of Southern California.

The initial phase of Guilford's research was based upon a population of young adults. Follow-up research by many investigators has substantiated the original findings with subject populations ranging in age from two through fifteen years. It is this validation on school age children which provides the general rationale for the model being used as the nucleus of the Project LIFE Perceptual/Thinking Series.

In 1969 Dr. Mary Meeker published a book, *The Structure of Intellect - Its Interpretations and Uses.* In the book, Meeker systematically adapts the model for educational use and practice. This application is concentrated in the areas of curriculum development, human learning, and developmental problems. In conjunction with the original book, Dr. Meeker with Sr. Katherine Sexton and Mary Richardson developed a set of workbooks called *The SOI Abilities Workbooks* (1972).

Although other models have been promoted by authorities, Project LIFE felt that this model provided the best all-inclusive structure by which materials for teaching intellectual skills could be developed. The model is broad enough in spectrum and defined to such an extent that most other models can be superimposed. It was also recognized that as additional information becomes available, there could be modifications to the thinking and quantitative data relating to those processes of intellectual functioning.

LIFE Interpretation of SOI Model. The educational community should be as cognizant of teaching "the process of learning" as it is the "product of learning." That is, teaching the ability to learn is at least as important as the goal of teaching the mastery of prescribed content. It is with this background and rationale that the GE/LIFE Perceptual/Thinking Series was developed. Each of the 102 filmstrips in the Series fits into a particular cell of the SOI model.

Memory is the process of retaining, storing and recalling information. It is a well known intellectual process since it is one of the oldest to be defined. It is recognized as a primary mental function. It is also recognized that memory is involved with many different products and content areas. It is generally known that there are distinctively different kinds of memory - memory for color, numbers, sets, objects, figures, designs, and the like. The model defines the products in terms of the organization of the information.

The first product area is the *unit,* or that thing which can be processed singly as in the case of a letter, a single word, or a single idea. The second product area is *classes,* or the ability to classify items. A third product area is *relations,* or the ability to see relationships or connections between such things as figures, symbols, words, or ideas.

Another product area is identified as *systems,* or that area concerned with seeing structure or sequence. Another kind of product is called *transformations.* It

is more of an abstract ability. This represents the task of redefinition or defining existing information in terms that have been transformed from the original material. The last product area is that of *implications*. This involves the ability to foresee consequences of different situations or problems. The LIFE filmstrip of "Maze Tracing" is an example of teaching and determining the ability to see implications in figural materials.

The broad classes or types of information that are capable of being discriminated are called *content*. The SOI model provides for four content classes. The first class is *figural*, or those items that may be shown as shapes (i.e., trees, forms, concrete objects). The second class is called *symbolic*. If the stimuli is cognized in the form of a numeral, a single letter, a note of music, or a code symbol, it is different from a figural concept and thus identified as a symbol. As such, an individual can comprehend that a tree differs from a number.

A third content area is labeled as *semantic*. This refers to words and ideas where an abstract meaning is so associated in the individual's repertoire of external knowledge and which calls up the internal associated stored word. For example, when one reads the word *tree*, it has meaning and is therefore semantic. The fourth content area is that of *behavioral*. Behavioral is a manifestation of a response and a stimulus. This is one area which is not directly covered in the Project LIFE Perceptual/Thinking Series. This, along with divergent production as an operation, is open-ended and best viewed, controlled and evaluated by the student, his peers, or his teacher.

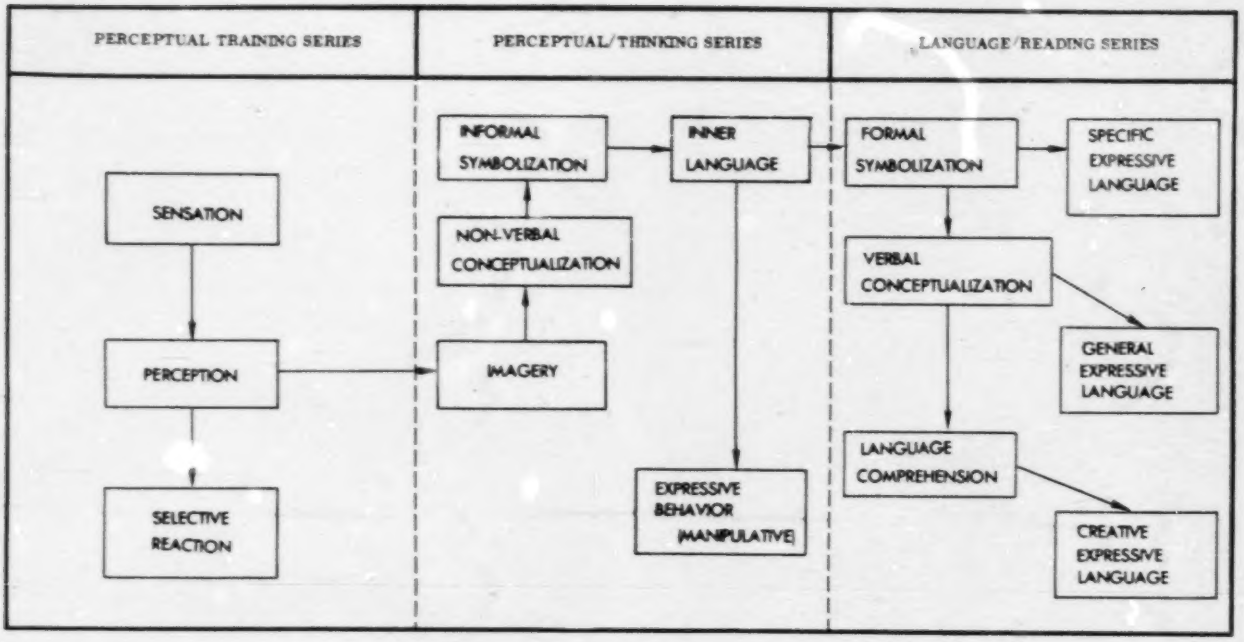
Each of the filmstrips in the Perceptual/Thinking Series is cross-referenced to one of the cells in the SOI cube. The test filmstrips (12) are the only ones that are not cross-referenced. The cells are identified by letters with the first letter indicating operation, the second letter content, and the third letter product. For example, the filmstrip numbered 1-1 is entitled *Color Memory*. The cell is MFC. The operation is *memory*, the content is *figural*, and the product is *classes*.

Language/Reading Series

The LIFE Language/Reading Series is a comprehensive group of programmed filmstrips designed to take the child from an initial reading point with minimal linguistic understanding to an ever-broadening scope of vocabulary, grammatical awareness, and linguistic competencies.

The developmental design was based upon scores of elementary school curricula, various word lists, and consultative input. The sequential development of materials begins with nouns, then adds verbs, then a combination of nouns and verbs into a sentence structure, and then gradually introduces other linguistic components.

Continuity of Programmed Components. The sequence begins with the Perceptual Training Series and progresses through the first half of the



SCHEMA OF LANGUAGE DEVELOPMENT IN THE GENERAL ELECTRIC/PROJECT LIFE PROGRAM.

Perceptual/Thinking Series. It is then recommended that the beginning sets of the Language/Reading Series be introduced. Each filmstrip provides the conceptual base and framework on which the major pedagogic concepts for subsequent filmstrips are based. Similarly, each set provides the conceptual prerequisites needed to experience success on subsequent sets in each series.

Many developmental considerations were outlined prior to, and in conjunction with, the development of the sequential Series. The following eighteen factors had the greatest influence during the developmental process.

1. *Vocabulary*
2. *Sentence Length*
3. *Percentage of Different Words*
4. *Word Length*
5. *Sentence Structure*
6. *Personal References*
7. *Pictorial Assistance*
8. *Affixes*
9. *Prepositional Phrases*
10. *Factual Information*
11. *Comprehension Accountability*

12. *Frame Design*
13. *Level of Illustrations/Vocabulary*
14. *Terminal Behavior Desired*
15. *Abstractness*
16. *Organization*
17. *Format*
18. *Concept Interrelationship*

Holidays. The holiday sets were designed to complement the Language/Reading Series and are programmed to be used in conjunction with or immediately following each language/reading level.

1. Holidays I includes Christmas 1, Halloween 1, Easter, Valentine's Day, and Birthday Party. These filmstrips are at an interest and reading level of a child in the first grade and to be used with Language/Reading Level I (Sets 1-8).

2. Holidays II is programmed to be used in conjunction with or immediately following Language/Reading Level II (Sets 9-16). This set of filmstrips includes the holidays of: Thanksgiving, Christmas 2, Halloween 2, Fourth of July, and Columbus Day. These informative, child-oriented filmstrips are designed to be used after the students have mastered the basic vocabulary and sentence structure in Level II and they are written at approximately the second grade reading level.

3. Holidays III is programmed at the third to fourth grade reading level and is to be used in conjunction with or immediately following Language/Reading Level III (Sets 17-24). This set includes the holidays of: Labor Day, Memorial Day, Veterans' Day, Washington's Birthday, Lincoln's Birthday, and Martin Luther King, Jr.'s Birthday.

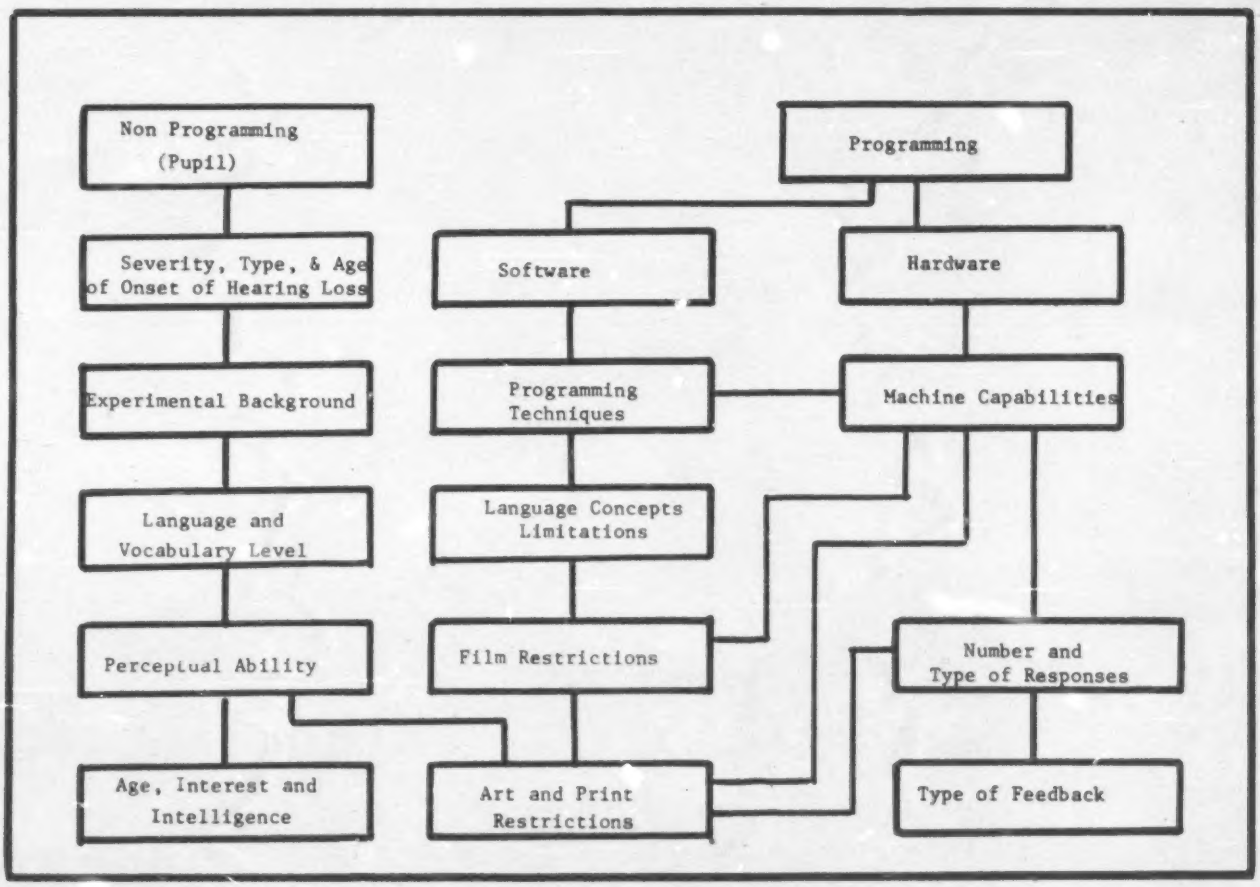
4. Holidays IV includes Flag Day, New Year's Day, Dominion Day, Hanukkah, April Fools' Day, Ground Hog Day, St. Patrick's Day and Mother's/Father's Day. Holidays IV is programmed at the fourth to fifth grade reading level and is to be used immediately following Language/Reading Level IV.

The holiday sets have been found to both reinforce and extend the language concepts as introduced by Project LIFE at the various levels as well as provide the teacher with a valuable resource for teaching the concepts associated with the holiday. The filmstrips in this series are designed to be used for individualized instruction. It is recommended that the Project LIFE

"Holidayland" (21 filmstrips) be used in a group manner. In Holidayland, the same filmstrips are rewritten at the third to fourth grade reading levels for utilization in small or large group instruction.

Programming Restraints

Nearly every type of mediated instruction has restraints. Some, of course, have more restrictions or limitations than others. In general, the efficiency of any system is directly proportional to the number and types of restraints imposed upon it. The Project programmers were directly concerned with three major types of restraints: (1) the abilities and characteristics of the target population (those for whom the program was intended); (2) the hardware (the teaching machine's capabilities); and (3) the software (the limitations imposed by the program itself).



Project LIFE Programming Restraints

The Project programmers indicated that the greatest curb was imposed on them by the learner, rather than any aspect of the presentation mode or program. Of critical importance is the severity and type of hearing loss and the age of the child when the given loss occurred. If the loss was profound and prelingual, it has a marked effect upon the number and type of experiences he has had, as well as his level of vocabulary and language. Another programming restriction is the age, interests, and approximate level of conceptualization for which the program was intended. Similarly, the programmer must be aware that the young deaf child may be deficient in perceptual ability. Finally, it must be borne in mind that numerous other child-centered restraints can stem from social, emotional or communication problems.

The programming restraints are of two types--software and hardware. The two, though closely related, impose different demarcations upon a programmer. The teaching machine has certain capabilities which govern the programming technique that will be employed. For instance, the present version of the Project LIFE machine accepts only linear, rather than branching programs, and is more suitable for multiple choice than for constructed response programs. A software restraint is that certain concepts do not lend themselves well to traditional programming (sensations, concepts involving motion, emotions, etc.). Also, the film, art and print restrictions must be realized in terms of all three restraints--the perceptual ability of the child, the software, and the resolution characteristics of the machine. Other limitations of the machine are the number and type of responses allowed, as well as the manner in which the child's responses are confirmed. The Project confirms responses via a green confirmation light which illuminates the moment a correct response is obtained.

In summary, the programmer must continually bear in mind the total spectrum of restraints. Though some appear to have a greater confining effect than others, they are all tightly entwined and often have an influence upon one another.

Program Considerations

After a comprehensive analysis has been made of the English language, a study of the deaf child's language problems must be made. This gives the programmer a basis for establishing the necessary initial vocabulary, language principles, and sentence patterns. These must be programmed and they in turn serve as the foundation for subsequent programs. Every program should be designed to teach what it sets out to do in the most effective, economical, and interesting manner possible. This writer has designed a programming flow chart which schematically shows the procedure used by Project LIFE in planning, constructing, and evaluating a program of instruction (See Programming Flow Chart).

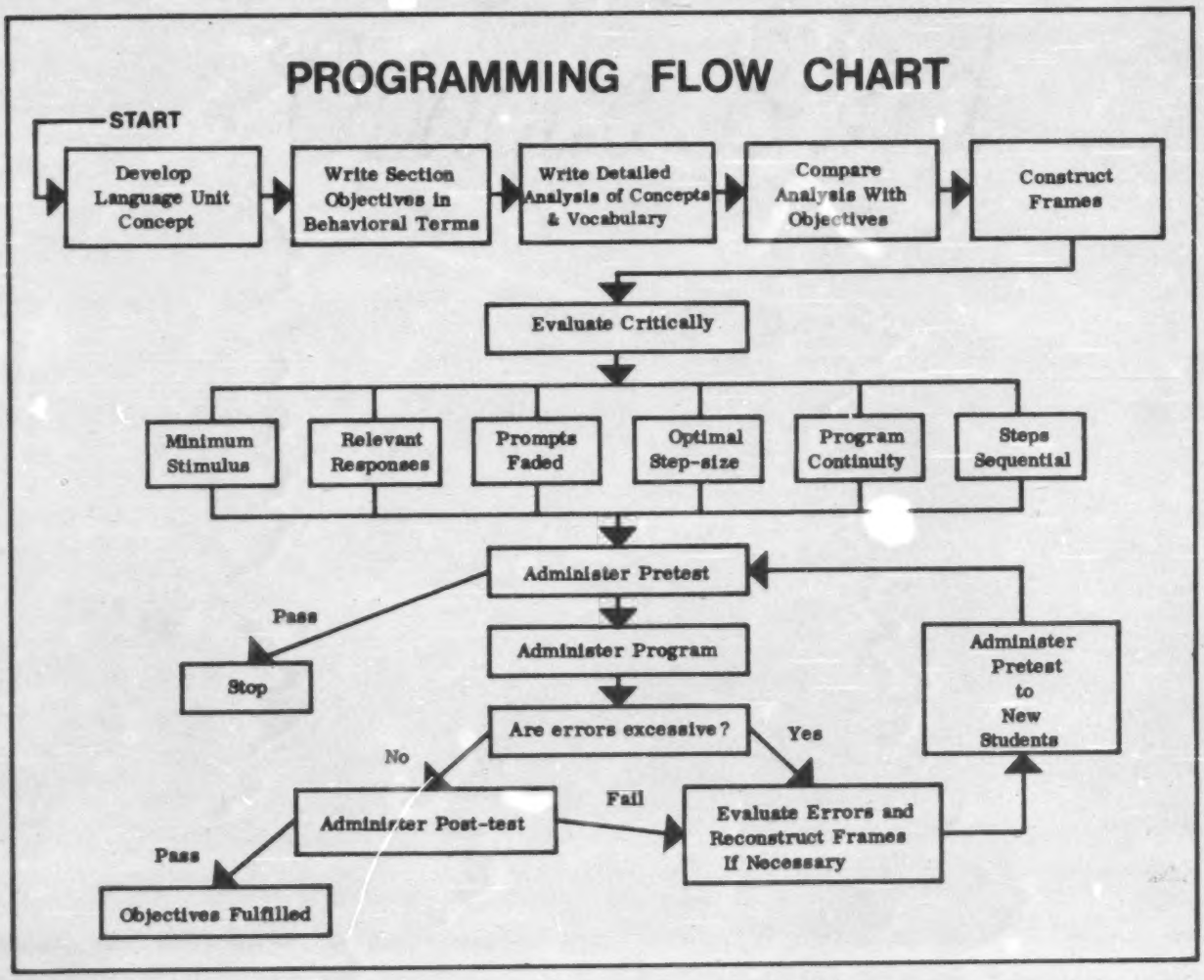
The Project's programs are developed around thematic units (composed of approximately 600 frames each). Some of the early ones are: people, pets, toys, body parts, clothing, foods, shelter, safety, holidays, sports, community helpers, and the like. Each unit is divided into sections with specific objectives.

Following the listing of the objectives, a detailed analysis of the language concepts and vocabulary is made. Prior to the writing of the frames the concepts and vocabulary are compared with the original objectives to insure compatibility. The frames are then constructed and evaluated in light of several basic programming principles. Teachers of the deaf have repeatedly demonstrated that severely hearing impaired children are readily overwhelmed by excess verbiage. Consequently, the number of words used in any given frame should be kept to a minimum. Of course, the maximum number of words that are used in a frame would be dependent on such factors as: the age of the child, the amount of unfamiliar vocabulary that is being introduced, the linguistic concept that is being stressed, the complexity of the sentence patterns, etc. Some programmers have indicated that a "point of diminishing returns" seems to be reached at around 20 words per frame. If he is repeatedly using more than this approximation, he may discover that he is employing words that are nonessential to the frame objectives.

The programmers must be certain that the responses demanded on the discrimination frames are relevant to the over-all objectives of the Project, the general objectives of the unit, and the specific objectives of the section. Also, the cues and prompts must be gradually faded to insure that the child is responding to the objective and not some extraneous factor. Another important programming check is the step size, or the amount of increase in subject matter difficulty with each succeeding frame in the program. In research with normally hearing subjects, it was found that small step programs produced significantly better performance than large step programs. However, it was found that subjects learning under the procedure of small steps took significantly longer to complete a given program. The Project has attempted to compromise between the two extremes. Thus, an attempt is being made at developing programs that possess a step size that challenges the deaf child but not so large that he becomes discouraged with the complexity of the task. Closely related to the size of the steps is the step sequence. The presentation should be logical and sequential and the chain of thought from frame to frame should be carefully linked.

The flow chart shows that the remaining steps in the analysis of the program are traditional in nature. The pretest is administered to a series of students. Those who pass do not need that program but instead will take the pretest of the next program in sequence. This procedure is continued until a pretest is failed. They are then administered that particular program. If their program errors are excessive, the errors are evaluated and the program frames are

reconstructed if necessary. If the frames are rewritten, the program must be retested on a new group of deaf students (the selection of the new students is contingent upon the failing of the pretest). If the pupil's program errors are not excessive, they are administered the post-test. Of course, if they pass the post-test, the objectives are fulfilled. If they fail the post-test, the programmer may conclude that the program of instruction did not teach what it was supposed to teach. The logical procedure would then be to again reconstruct the program frames and again administer the program to a new group of students. In other words, the post-test is the juncture at which the programmer determines whether the student can actually behave as planned when the specific objectives for the section were formulated.



SUMMARY

The primary goal of the GE/LIFE Program is the development of language--both receptive and expressive. In order to accomplish this objective, a number of integrated core and support components were developed. The beginning materials were built around basic vocabulary and sentence structures that the child will find immediately functional.

An ever-expanding functional vocabulary is programmed in a linguistic milieu, beginning with very simple sentence patterns and spiraling upward to include more sophisticated language structures. Each language set focuses on a general topical theme. The theme of the beginning sets includes: self, animals, food, playthings, activities, clothing, and shelter. The theme of later sets include: history, travel, conservation of energy, and pollution control.

All instructional components of the Program are designed and developed with purpose statements and behavioral objective statements. A test filmstrip, provided with each set, is designed to measure the degree to which the behavioral objectives are met. The test can also be used as a pretest (diagnostic), post-test, or for review purposes. If used as a pretest, the teacher is provided with information whereby the student may by-pass information already in his repertoire. Filmstrips in this series as well as in "Storyland" (28 filmstrips) and "Holidayland" (21 filmstrips), may be used in conjunction with the PAL System, the Student Response Program Master, or may be used with any other classroom filmstrip projector.

IV. Historical Tracing of Hardware Development

Overview

In the early stages of software planning for Project LIFE, it was decided that the filmstrip medium would be the most cost-efficient and motivational avenue for providing the major thrust of programmed materials. It was determined that there should be other types of instructional media to supplement and complement the filmstrips which served as the nucleus of the system. The anticipated supplements to the filmstrips included both print and non-print software.

In 1963, it was decided that the hardware should capitalize upon proven principles of educational psychology. Namely, the device should allow for individualized instruction, it should allow for the student to progress at his own pace, it should elicit active (overt) responses from the student, and it should provide him with immediate feedback regarding the appropriateness of his response. Also, it was felt important that the device should allow the student or teacher to rapidly determine at the end of a learning sequence whether or not the student had mastered the material to acceptable criterion levels. Since it was anticipated that the Project LIFE system would be in the classroom at the disposal of individual teachers, it was believed important that the machine should be easy to operate, mobile, highly dependable, and relatively inexpensive. Below is a condensed historical tracing of the hardware progression.

Survey of Existing Hardware: 1963-1964

The Project LIFE administrators carefully and analytically surveyed the experimental and commercially available hardware that was considered to have possible application to the LIFE needs. In every case investigated, the hardware was found to be inappropriate or inadequate in allowing the student to interact with the software in a manner deemed desirable. It was thus decided that a specially designed piece of equipment would have to be manufactured. Project LIFE, the National Education Association and the U.S. Office of Education felt that this could best be accomplished by means of a subcontract with a private corporation.

Viewlex: 1965-1969

Project LIFE entered into a subcontract with Viewlex, Inc., to produce hardware to the provided specifications. The subcontract under sponsorship of the U.S. Office of Education, called for the development of two prototype machines, followed by the production of eighteen machines to be placed in strategic field test centers for evaluation. The specifications called for a device that could accept filmstrip or movie-loop cartridges, along with the synchronization of sound in either modality. The dual-screened device was housed in a "suitcase" enclosure (weighing 61 pounds), and was comprised of a Viewlex filmstrip projector, a technicolor 8mm movie projector, and a Cousino tape player. Each piece of media was inserted via a cartridge. After two years of field testing, the LIFE administrators decided to withhold commercial production of the Viewlex-produced device. The primary undesirable features included the physical size, lack of dependability, the lack of compatibility between standard software and the device (both the straight 8mm movie film and the 35mm filmstrips required special coding dots on every frame), and the proposed cost (over $1,000 for the commercial version in large production quantities).

John Tracy Clinic: 1968-1969

The Project administrators became aware of a student response device that was produced by the John Tracy Clinic, 806 West Adams Blvd., Los Angeles, Calif. 90007. The device was able to control certain standard filmstrip projectors by way of an attachment to the remote control outlet. The Project requested that the Tracy Clinic consider modifying their existing unit by incorporating certain positive features of the Viewlex unit. At no engineering expense to Project LIFE or to the U.S. Government, the Tracy Clinic produced four prototype Program Masters. The Project then purchased, after some additional minor modifications, 200 of the Tracy machines for $160.00 each. These 200 machines were placed in the Project's 100 research and evaluation centers for thorough field evaluation. The machine was found to have excellent features, though there was not a high degree of reliability.

The General Electric Company: 1971-1975

The John Tracy Clinic, an educational institution, applied for and received several patents related to the Program Master and the manner in which it was interfaced with standard audiovisual equipment. Since the Tracy Clinic was not interested in commercially producing the hardware, they entered into a royalty agreement with the General Electric Company. G.E. began producing and offering the hardware in conjunction with the distribution of the Project LIFE software.

The G.E. Student Response Program Master with plug-in response codes sold (during the 1971-72 academic year) for $214.25, including rear projection screen and appropriate patch cord to connect to a standard remote-controlled filmstrip projector. G.E. has made several improvements on the initial unit, including an eight-position rotary switch to replace the plug-in response codes. The new device as offered for commercial distribution during the 1972-73 year (supplanting the former machine) was sold for $224.00, excluding the rear projection screen and patch cord. The price of the SRPM Mod II was increased to $248.00 during the 1974-75 academic year.

October 2, 1972 RFP Hardware Guidelines

Project LIFE of the National Foundation for the Improvement of Education released a Request for Proposals on October 2, 1972 to furnish a software and hardware plan to exclusively market the Project LIFE system through December 31, 1978 (and later extended to December 31, 1979). One of the requirements as stated in the RFP was for the marketer to design and produce a self-contained student response device that would be software compatible with the Project LIFE filmstrips. The required and desired features of the self-contained device as specified in the RFP follow:

Required Features

1. The full viewing screen surface should be clearly visible from a seated upright or vertical position.

2. Illumination should be provided by a lamp of sufficient capacity to adequately light and equally distribute the light to all four corners of the screen without a distracting "hot spot."

3. The device should be capable of showing the Project LIFE programmed filmstrips, as well as non-programmed filmstrips. Thus, there should be a switch that allows for the advance of the film with each depression of the advance button without first depressing the correct answer symbol when using non-programmed filmstrips.

4. The device must have four multiple choice buttons with the imbedded symbols (left to right) of the square, plus, circle, and triangle, respectively.

5. The device must have a separate advance button that allows for the advance of the filmstrip only after a correct response has been made when viewing a programmed filmstrip.

6. The device should automatically record and keep a cumulative total of the student's errors on each filmstrip.

7. The device must have built-in circuitry that is compatible with the eight response patterns used in the LIFE programmed filmstrips.

8. The self-contained unit must have an eight-position selector switch or an eight-button response panel that allows for the rapid selection of any one of the eight response patterns. Extrinsic response plugs or response cards shall not be acceptable.

9. The automatic film advance electro-mechanical linkage shall be substantially more positive in operation than most of these on present commercial projectors. It shall have a reliability factor of positive operation consistent with five years of school or home use approximating 12,000 hours of operation.

10. The frame advance mechanism shall be of a sprocket or claw type, or a suitable alternative that provides for very easy, direct, and positive framing. The film shall stay in frame without further adjustment once it is so positioned as it advances through the filmstrip. Pressure roller advance concepts will not be acceptable, unless they have a positive advance.

11. The student response unit may be incorporated either as a built-in feature or as an appendage permanently attached to the viewer but positioned, if at all possible, so that the "keyboard" is below and in line with the viewing screen.

12. Irrespective of the configuration of the student response unit, either concept shall incorporate the following refinements:

    a. The "On-Off" switch shall be so situated as to make it inconvenient for the student to operate when he is in a normal seated position;

    b. The three-digit counter should have an observable or readable face and should be so located that it may not be easily tampered with during normal student operation;

c. The eight-position rotary switch should have a torque level that makes it difficult for a young child to turn;

d. If an eight-position button panel is used to select the appropriate response patterns, it should be located on the back of the device where it is not readily accessible to the child;

e. The device should have a fuse that is readily accessible;

f. The device should have an indicator light on the front viewing panel that illuminates when it is turned on;

g. There should be an indicator light that illuminates when a correct response is made; and

h. There should be a re-set button on the back of the device which recycles the response pattern to the beginning of the 20-cycle (20 frame) sequence.

13. The unit shall have a grounded three-wire power cord, UL approved, 12 feet in length with provisions for storing the cord on or in the machine with one end permanently attached.

14. The unit shall be so designed for production to preclude any possible electrical shock hazard. Such provisions shall also include UL approval.

15. The device shall have a high dependability factor with very infrequent maintenance problems. To the extent possible, it shall be solid state, thereby eliminating as many relays as feasible.

Desired Features

16. The overall size and dimensions should be suitable for usage of the device on a desk top or in a study carrel.

17. The unit should be light enough for a first grade student to handle and set up; the weight should not exceed twenty pounds.

18. The screen size should be a minimum of seven inches by nine inches.

19. The screen material should be shatter-proof and the surface should not readily show finger-marks.

20. The projection lamp should have a life of 300 to 500 hours and must be readily accessible for changing.

21. If at all possible, the device should operate on an internal power level of less than 110 volts. It is assumed, however, that the device would connect to a standard 110 volt AC outlet.

22. If practicable, the device should operate from external power (110 volts AC) or from its own internal power source (batteries). A three-way selector switch would allow for a setting of AC-BATTERY-RECHARGE.

PAL System: 1974-1975

The General Electric Company was the successful bidder to the RFP of October 2, 1972. GE thus had the right and obligation to produce and market a self-contained student response unit in accordance with the required hardware specifications listed in the RFP (and earlier in this chapter).

The self-contained unit, as manufactured for GE by their independent affiliate, Instructional Industries, Inc., Ballston Lake, New York, was produced and first distributed in January 1974. The "teaching machine" was labeled by the marketer as the "PAL System"--Programmed Assistance to Learning. The marketer's promotional/informational brochures described the self-contained unit as follows:

- Power Requirements--120 volts, 60 hertz, 350 watts;
- Height--12 inches;
- Width--14-1/2 inches;
- Depth--15-1/2 inches;
- Weight--25 pounds;
- Color--Beige & Black, with white silk-screened lettering;
- Screen--Self-contained rear projection: Image size 7-1/4 x 9-1/2 inches;
- Any filmstrip materials may be used with the PAL System by use of the code bypass switch. This feature allows viewing or previewing of any filmstrip materials;

- Additional functions and controls include response buttons (square, cross, circle, triangle), GO Button, Response Code Selector and Reset, Error Counter, Code Bypass, and Master Power. PAL projector controls include side mounted focus, continuous frame adjustment, automatic normal and center feed, and film exit accepts both forward and reverse wound film; and

- Projector includes high quality advance mechanism for positive framing, simple threading guides to prevent filmstrip damage or scratching, easy lamp replacement and lens removal for cleaning.

The PAL System is a self-contained projector systematically integrated with a student response keyboard which allows for the student to progress through the filmstrip frame-by-frame. Each frame calls for the student to actively participate by responding to the given stimulus. Operationally, the student must study each frame and make a selection by pushing one of a series of buttons coded to correspond with the symbol before each possible answer. If the student's selection is correct, he receives immediate confirmation when the green "GO" light comes on and he is able to advance the filmstrip to the next frame. If the wrong key is pushed, no advance is allowed, the error is counted by the machine, and the student gets another try until he is correct.

V. MARKETING/DISSEMINATION

RFP of February 1971

On February 18, 1971, Project LIFE solicited proposals from prospective bidders to commercially distribute the LIFE system on an experimental basis to test the viability of the concept. The General Electric Company, through its Corporate Research and Development (P.O. Box 43, Schenectady, New York 12301), was the successful bidder and, thus awarded exclusive distribution rights for a two-year period beginning April 16, 1971, and extending through April 15, 1973. On June 14, 1972, the GE Agreement was extended to August 31, 1973. In addition, they were authorized an extra four months, extending through December 31, 1973, to sell any extra software that was in the GE inventory as of September 1, 1973.

The primary purpose of the experimental distribution program was to determine whether the Project LIFE materials had sufficient commercial viability to warrant a five-year distribution agreement. As a result of an analysis after the first year of experimental distribution, the U.S. Office of Education, the National Education Association, and Project LIFE concurred that the materials warranted commercial distribution for an additional five years.After the first year of experimental commercial distribution (April 15, 1972), a sales analysis showed the following purchaser characteristics:

1. The total software and hardware sales for the first year were $172,317. Of that amount, approximately $95,000 was software sales.

2. There were 189 purchasers of the Project LIFE system from GE. These included school systems, institutions, corporations, and/or individuals.

3. The purchasers were located in 38 different states, with the largest number of purchasers in the states of California, New York, Michigan, Illinois, and Texas, respectively.

4. Approximately 45 of the purchasers intended to use the materials exclusively for the deaf, leaving 144 purchasers that anticipated using the LIFE system with other types of handicapped and non-handicapped children.

5. Other than the hearing impaired, the purchasers indicated that the materials would be used primarily in the following disability areas: reading disabled, learning disabled, educationally mentally retarded, emotionally disturbed, normal, gifted, and stroke patients.

6. The purchasers included private as well as public schools and a number of different types of residential schools and day classes.

RFP of October 1972

RFP Notification and Dissemination Procedures

Under the Copyright Program of the USOE, as set forth in its Copyright Guidelines dated May 9, 1970, Project LIFE was authorized to select a disseminator and enter into an agreement with that disseminator, for the production, publication, and distribution of the LIFE materials. The materials are under copyright and the Disseminator would, on an exclusive basis, be provided with distribution rights for a period of five years, provided that all of the requirements of the Copyright Guidelines are met. The principal requirement was for the selection of the disseminator on a competitive basis.

The USOE Copyright Administrator recommended to Project LIFE that the RFP be publicized by means of the "Publishers Alert Service (PAS)." PAS is an activity sponsored by the U.S. Office of Education, National Center for Educational Communication, to facilitate contact between publishers and educational research and development contractors and grantees of USOE. Educational products are announced through PAS on the initiative of the developer when it is considered desirable to inform the publishing industry that commercially viable educational items or systems are under development.

In many cases, the transition from the research and development environment to the normal classroom environment can best be accomplished by commercial publishers where capabilities for widespread marketing, reproduction, and distribution are indispensable for fulfilling this objective. As an incentive to enter into effective arrangements toward this end, USOE has established procedures for copyright protection of the publisher who successfully meets the developer's specification as expressed in his request for proposals.

The purpose of the Publishers Alert Service is to facilitate contact between developers and qualified publishers in order to stimulate early developer-publisher cooperation and timely distribution of tested products. In this particular case, Project LIFE followed the procedures indicated below:

1. LIFE completed the PAS Developer's product data form, and submitted it to the National Center for Educational Communication, USOE.

2. USOE arranged via a subcontract to have a two page flier produced which announced the availability of the Project LIFE RFP and briefly described the LIFE system.

3. The National Center for Educational Communication arranged for the PAS flier to be distributed to some eight hundred publishers across the United States.

4. Some twenty (20) publishers requested the LIFE RFP as a result of the PAS announcement.

5. In addition, Project LIFE sent an RFP to some sixty (60) other prospective publishers.

6. Several publishers responded to the RFP with a proposal.

Dissemination Requirements

On October 2, 1972, Project LIFE solicited proposals from publishers of educational materials for distribution of the Project LIFE instructional materials and production of the necessary related equipment. In the RFP, the prospective proposal submitters were requested to address themselves to the following marketing requirements:

1. Assure that "Project LIFE" was the predominant and/or leading name in all advertisements in exhibits, journals, brochures, and on the software itself, unless authorization was given to the contrary by Project LIFE. It was recommended that the name "Project LIFE" be readily apparent and prominent on all related hardware.

2. Attractively package the Project LIFE program, and provide high-quality brochures with appropriate illustrations and visuals.

3. Provide a nationwide distribution system with intermediate distributors.

4. Provide adequate sales personnel to contact all institutions for language impaired children, both private and public, including schools for the deaf, hard of hearing, emotionally disturbed, bilingual, educable mentally retarded, learning disabled, neurologically impaired, multiple-handicapped, and culturally deprived, among others.

5. Exhibit the Project LIFE system at several national conferences each year where the conferees have a high probability of being interested in the materials and related equipment. Though the Project LIFE Director would

make recommendations, the Disseminator would make the final determination as to the number and type of demonstration/training sessions in which to be involved, after carefully taking into consideration the recommendations of the Project Director.

6. Conduct seminars, workshops, demonstrations, symposia, conferences, and other types of demonstration and/or training sessions for potential users of the LIFE system. The Disseminator would make the final determination as to the number and type of demonstration/training sessions in which to be involved, after carefully taking into consideration the recommendations of the Project Director.

7. Print, duplicate, manufacture, stock, catalogue, advertise, promote, and sell the software and related hardware.

8. Produce a self-contained student response device that was software compatible with the Project LIFE filmstrips. In addition to the basic self-contained unit, it was hoped that some secondary or alternate hardware offerings that are compatible with the LIFE filmstrips would be provided to the prospective purchasers.

9. Develop a national network of hardware repair and maintenance centers where service was economical and rapid, or an alternate regional or central repair service that was comparable.

10. Develop an evaluation program with a commercial base that would provide detailed information related to different aspects of marketing, as well as an opportunity for information feedback from the purchaser. It was intended that this commercial marketing information provide Project LIFE with specific recommendations for future material development directionality, needs assessment in various areas of the handicapped, gaps in the present software system where more materials were needed, identification of those materials that needed revision or modification, and other types of similar information.

11. Continue to offer all programs in the 35mm filmstrip format (provided they were designed for this medium) to provide continuity to the LIFE program for those purchasers prior to January 1, 1974, and to those desiring the continuation of the program in this medium. The microfiche format, as well as others, was to be investigated to determine whether there was a more

superior medium to this modality. However, the filmstrip format must continue to be offered until approval to the contrary was provided in writing by the Director of Project LIFE.

12. Service all equipment, during the calendar year 1974, that is now in the field which was sold as part of the Project LIFE program, or equipment that was provided without charge to the Project LIFE field test/evaluation centers (the latter equipment was produced by the John Tracy Clinic). The developer understood that there would be a service charge for the repair of any piece of equipment. The Disseminator was responsible for establishing a reasonable, but equitable, charge.

RFP Review Procedure

Proposals for the marketing and distribution of the Project LIFE system were reviewed by a special *ad hoc* advisory committee selected for that purpose. The members of the advisory committee were thoroughly familiar with Project LIFE but were not employees of the U.S. Government, National Foundation for the Improvement of Education, National Education Association, Project LIFE, or of any corporation possibly interested in submitting a proposal in response to the present RFP. The special *ad hoc* advisory committee ranked the proposals in their order of excellence in responding to the requirements of the Project LIFE dissemination program.

Final selection was made by a committee composed of representatives from Project LIFE and NFIE/NEA. The latter committee took into careful consideration the recommendation of the special *ad hoc* advisory committee. Approval of the final selection rested with the Copyright Administrator, National Center for Educational Communication, U.S. Office of Education.

Proposal Evaluation Criteria:

A. Clarity and conciseness with which the Disseminator addressed the marketing needs and goals of Project LIFE 20%

B. Demonstrated capability of the Disseminator to accomplish a task of this type, including its experience, competence, and reputation for excellence 15%

C. Amount of money, equipment, and resources that the Disseminator was willing to commit to the present effort 15%

D. Promotional and sales plan submitted by the Disseminator 10%

E. Time frame for accomplishing the various listed proposed hardware/software strategies 10%

F. Quality of staffing pattern and competence of staff to meet the requirements of the RFP, as well as the Disseminator's technical competence/experience in educational technology 10%

G. Manner in which the Disseminator planned to service the different populations of children in the United States (and outside the U.S.) that could benefit from the LIFE materials, with particular concern for hearing impaired children 5%

H. Proposed format, design, and general appearance of the final package of materials and related hardware to be disseminated 5%

I. Type of marketing evaluation (hardware/software field acceptability, software gaps, analysis of purchaser and use characteristics, purchaser feedback regarding hardware/software modifications needed, and the like), that were offered at the Disseminator's expense to provide feedback information to Project LIFE and the USOE 5%

J. Degree to which the Disseminator expressed an interest in implementing new media (both supplemental software and alternate hardware--electrical and non-electrical) into the LIFE system 5%

TOTAL:.....100%

NFIE/GE Agreement

Subsequent to the "Proposal Review Procedure" (previously outlined), the General Electric Company was selected as the successful bidder to disseminate the Project LIFE program during the full-marketing phase of systems delivery. The "NFIE/GE Agreement," dated February 27, 1973, commenced on September 1, 1973 and will terminate on December 31, 1979. The Agreement, as approved on March 1, 1973 by Morton W. Bachrach, Copyright Administrator for the National Institute of Education and the U.S. Office of

Education, was signed on February 27, 1973 by Laddie L. Stahl, Manager, Research and Development Applications, General Electric Company, and on March 1, 1973 by Dr. James W. Becker, Executive Director, National Foundation for the Improvement of Education, and Dr. Glenn S. Pfau, President, Project LIFE, Incorporated.

Some of the salient features of the Agreement are listed below:

1. NFIE grants to the Marketer, its successors and assigns the following exclusive rights in and to the Project LIFE materials during the term or terms of copyright as herein provided: to print, publish, manufacture, market, sell, rent, and distribute Project LIFE materials throughout the world, and to license others to do so in foreign countries.

2. The Marketer will be responsible for all aspects of marketing and sales promotion under the terms and conditions of this Agreement.

3. The Marketer will display the "Project LIFE" name prominently on all Project LIFE instructional materials, and advertising, sales promotion, and exhibits thereof.

4. During the term of this Agreement, the Marketer will not give the Project LIFE materials a new name without the written consent of NFIE.

5. In the event the parties agree upon a new name to be used to identify the Project LIFE materials, it is the responsibility of NFIE to register and protect said new name by any means deemed appropriate.

6. The Marketer shall pay to NFIE royalties and grants as hereinafter set forth during the term that the Project LIFE materials shall be covered by copyright as set forth herein.

   A. A royalty of six percent (6%) of the Marketer's actual cash receipts received and six percent (6%) of the Marketer's licensees cash receipts received from the sale or lease of all Project LIFE instructional materials by Marketer or Marketer's licensees throughout the world.

   B. A "Validation/Development/Support" grant of twelve percent (12%) of the Marketer's actual cash receipts received and twelve percent (12%) of the Marketer's licensees actual cash receipts received from the sale or lease of all Project LIFE instructional materials by the Marketer or Marketer's licensees throughout the world.

7. The Student Response Program Master (Mod II) will continue to be sold by the Marketer as long as the Marketer determines sufficient demand exists during the period of this Agreement.

8. The Marketer shall design, manufacture, and market a "self-contained" response unit consisting of an integral 35mm filmstrip projector, compatible with existing filmstrip programs and response patterns, which shall be offered for sale at the inception of this Agreement. The "self-contained" unit shall meet the NFIE required features as indicated in the RFP of October 2, 1972.

9. Since the parties to this Agreement wish to make the Project LIFE system a vital educational resource, available throughout the world, the Marketer shall use its best efforts to:

   A. Package attractively, promote, market and sell all components of the Project LIFE system.

   B. Establish national and international distribution for the Project LIFE materials.

   C. Work with NFIE to modify existing Project LIFE materials to increase their commercial viability and acceptability in non-English speaking countries.

   D. Exhibit annually at the major conventions deemed appropriate for the dissemination of the Project LIFE system, and through distributors exhibit at regional conferences.

   E. Advertise the Project LIFE system in appropriate trade journals directed to the special education market.

   F. Advertise the Project LIFE system in publications directed to public and private school administrators and teachers of elementary and pre-school classes.

10. For the duration of this Agreement, the Marketer shall have the sole license and right to disseminate all Project LIFE materials developed in the past or during the term of this Agreement by NFIE, except as hereinafter provided.

11. The name Project LIFE shall not be used by the Marketer, without express written permission by NFIE, on any materials and/or related equipment, except on said materials produced, developed, or owned by NFIE.

12. NFIE intends to continue developing new Project LIFE educational materials and to offer them to the Marketer for dissemination under the terms of this Agreement. NFIE further intends to continue developing high quality materials of the kind provided to the Marketer during the two (2) year experimental distribution phase.

Summary of Software/Hardware Sales

As of August 31, 1975--termination of government funding for Project LIFE--the General Electric Company had been marketing the Project LIFE instructional materials for approximately four years and four months (April 16, 1973 through August 31, 1975). During this period of time, GE sold (primarily via their independent affiliate, Instructional Industries, Inc., Executive Park, Ballston Lake, New York 12019) approximately $1,000,000 worth of Project LIFE instructional materials and approximately $650,000 worth of specially designed student response equipment compatible with the LIFE software.

It is difficult to determine how many students have been exposed to, and learned from, the Project LIFE materials. Such a survey would be compounded by the fact that there are about 25 dealers located in different geographical areas across the United States, some having as many as ten salesmen. Also, some cities/districts/schools/classes/individuals purchase several sets of all materials, whereas other programs acquired only a few copies of one of the support components (story books, pictionaries, workbooks, etc.).

Nevertheless, it is reasonable to estimate that more than 2,500 different programs have purchased some or all of the system. Included in the count is more than 500 of the 1,400 programs for the deaf and hard of hearing in the United States. Some have estimated that as many as 25,000 of the 52,000 school age deaf students have interacted with the Project LIFE materials. A Project LIFE educational marketing consultant estimated that there are at least 100 students learning from the LIFE materials in each of the 2,500 different programs, for a total of some 250,000 students.

Though many schools are using the Project LIFE materials in a non-machine mode of instruction, it is interesting to note that over 1,300 Student Response Program Masters were sold during the four year period, as well as some 700 PAL Systems, and approximately 100 PAL Systems with accompanying sound capability.

There are some 7 million handicapped children in the United States, the majority of whom have language and/or reading difficulties. In addition, there are 12 to 15 million disadvantaged children and an additional 30 million elementary children who are classified as "normal." Thus, though a significant number of children are now using the General Electric/Project LIFE Program, an infinitesimally small group has used them in proportion to the population of students who could potentially benefit from them.

VI. EVALUATION OF PROJECT LIFE MATERIALS

Introduction

The preparation of this section of the report is based on a review of approximately 150 documents originating both internally and externally to the Project. This review was prepared by an individual not directly involved in the development of or prior evaluation of Project LIFE materials.

Project LIFE conducted two general types of formal evaluation--developmental and summative. In addition, a variety of samplings of user reaction were taken. Independent of Project LIFE, but frequently with its encouragement and material support, a variety of school and university based evaluation projects were conducted.

Research-Development Cycle

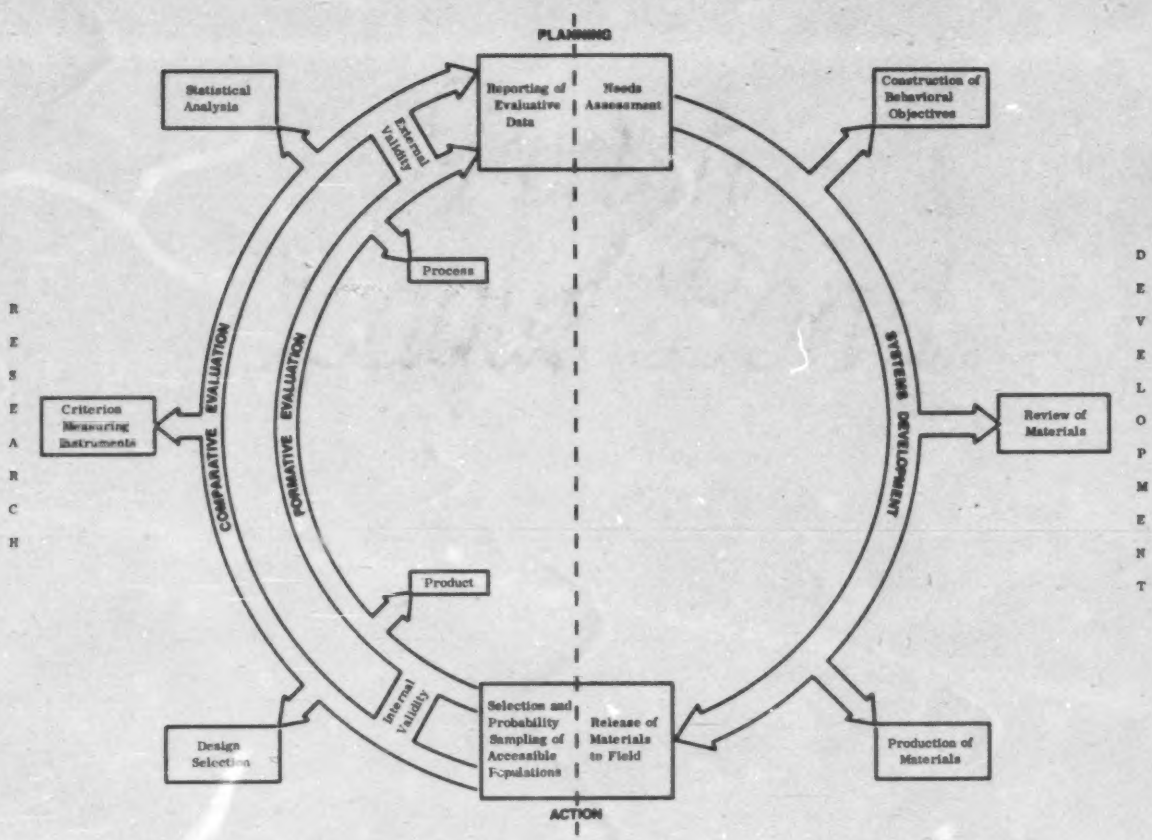
Project LIFE was comprised of two departments - Systems Development and Research. As the diagram on the following page portrays, the Planning juncture and the Action juncture both provide vital points of contact between the LIFE Systems Development Department and the Research Department while at the same time permitting each to remain operationally distinct from the other. Such distancing in terms of operations was considered a healthy administrative feature that encouraged a degree of objectivity.

Operationally, the Research staff interacted, on a regular basis, to provide input to the Development staff based on a wide range of information, from field test data analysis to informal comments provided by users.

These relationships contributed to the effectiveness of the overall program output. Formative evaluation as conceived by the LIFE Research Department would include, "Anything that is relevant to judging whether the program's materials are actually accomplishing the aims that they were intended to accomplish for the different populations to be served."

Developmental Testing--Process Description

Developmental testing is viewed as a process of getting child-based responses to prototype materials and using these responses as data for frame-by-frame revision of the prototype. After experimenting with various



RESEARCH-DEVELOPMENT CYCLE

approaches to developmental testing, Project LIFE adopted the following procedure:

1. Developmental testing was conducted by the programmer.
2. Testing was conducted using a prototype in a slide format.
3. The LIFE Student Response Program Master or PAL unit was used to simulate actual learner use conditions.
4. For each tested individual, recorded data included demographic information, materials designation, time required, running error count, and frame-by-frame programmer notes.

5. The minimum number of students tested for each section of instructional material was as follows:

   A. Teaching sections--ten (10) students.

   B. Supplementary stories--five (5) students.

6. Based on studies, the criteria for revision of a frame were:

   A. Two errors among ten subjects for teaching sections,

   B. Two errors among five subjects for supplementary sections.

7. After revision, the modified programs were retested.

The results of developmental testing often led to the following types of changes:

A. Changes in visual material,

B. Changes in verbal material,

C. Changes in sequence within a filmstrip, and/or

D. Changes in sequence among filmstrips with a set/unit.

Field Evaluation - Process Description

Filmstrip Materials

Project LIFE maintained a set of field evaluation sites. The number of sites varied from 12 to 102 to 52 over time. The stated purpose of the field evaluation activity was to obtain data to demonstrate the effectiveness of the Project LIFE materials in producing student effects consistent with the stated objectives, that is validation testing. It is important to note, however, that the intent was to obtain this data at the level of individual filmstrips and sets/units, not to demonstrate the validity of the system as a whole. This fact was considered a trade-off resulting from feasibility considerations.

Field evaluation was conducted by a separate Project LIFE Research Department. Upon completion of revisions based on developmental testing feedback, the materials were prepared in filmstrip form and placed in appropriate classrooms at 20 or more evaluation sites.

Data collected included demographic information, materials designations, time required, running error count (generally at the filmstrip level). Several sites agreed to submit frame-by-frame data but in general collection of such data was not consistently carried out.

Most of the analyses of field evaluation data by Project LIFE were in terms of:

a) pre-post criterion test performance; and

b) error rate within filmstrips and units.

A typical unit contains a pre-post test filmstrip (a single test), six (6) teaching filmstrips, and a story supplement filmstrip.

Instructions to field test site participants varied over time. Project LIFE found it necessary to minimize record keeping responsibilities of the participating teacher.

Facsimiles of typical field evaluation feedback forms are provided in Appendix E.

Supplementary Materials

Project LIFE developed a set of non-filmstrip materials designed to reinforce skills and knowledge covered by the training filmstrips. These included a series of story books, funbooks (workbooks), and pictionaries (picture dictionaries). These materials were not designed to achieve specific learning objectives and, as a result, the evaluation approaches used for filmstrips were not appropriate. In general, teacher rating forms were used to collect information for revision purposes. Samples of rating forms are provided in Appendix E.

Independent Studies

There have been a variety of independent studies of Project LIFE materials. For convenience in preparation of this report an available list of reportable studies was included. Several items originally on this internal list were removed on the basis that they were not actually research or evaluation studies or that they used Project LIFE materials but evaluated some variable other than the material themselves. The quality of the studies is extremely variable from a

research or evaluation design point of view. Many of the studies were masters or doctoral dissertation investigations. Additional studies may be found by reference to the publications listed in this report (Appendix C) and brief annotations are provided in Appendix D.

Evidence of Reliability of Tests Used by Project LIFE

A typical set/unit of Project LIFE materials consists of eight filmstrips, including a criterion filmstrip. The criterion filmstrip consists of 30 to 40 test items, usually two items to test each skill or concept introduced in the referenced set of filmstrips. The single criterion filmstrip is used as both a pretest and a post test so that the post test is identical to the pretest. Clearly, a deviation in performance between pre and post test applications (by the same subjects) is a result of variables other than the test items themselves. Apparently, no systematic analysis of test reliability was undertaken by Project LIFE.

In a study by Barringer, a control group was tested on three occasions (equivalent in the design to a pretest, post test, and retention test). The post test was administered on the same day as the pretest and the third test was administered two days later. Mean error counts on the three tests were, respectively, 8.50, 6.25, and 7.15, a non-significant variation. In repeated applications of the same tests without intervening treatment, the students tended to exhibit the same pattern of errors as it relates to the mean level of performance.

In a study by Oyer and Frankmann, in a retention test situation after instruction using five sets of materials, test scores on four of five sets reflected no significant change from the post test to the retention test, again suggesting that in a test-retest situation, without intervening instruction, student performance will remain similar in terms of mean performance.

Lennon tested 48 subjects using the criterion filmstrip twice for pretesting, and converted error scores to "number correct" by subtraction. In this situation, the mean number correct on the first and second pretest uses were respectively 19.20 and 21.08, again suggesting stability of mean scores over time, without intervening instruction. However, upon inspection of correlation from pretest to pretest the Pearson product moment coefficient is relatively quite low (.27) which might be expected under conditions of guessing by subjects. That is, substantially different responses were made by the same individuals on the separate pretests.

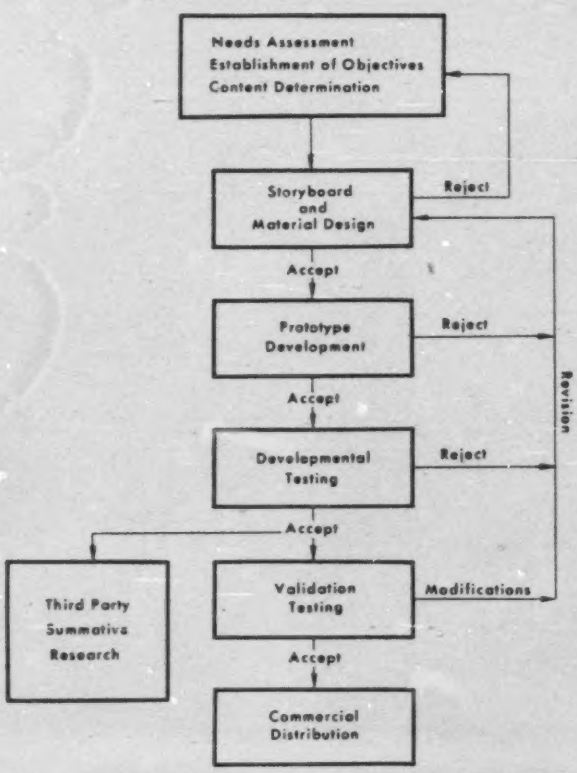
This pattern, however, was not apparent when comparing post test and retention test scores where a Pearson product moment correlation coefficient of .75 was observed.

As noted previously, each objective, programmed word, and linguistic structure introduced in a unit is tested by at least two items in the appropriate criterion test filmstrip. In the Project LIFE field test centers, not all students take both a pre and post test for a set of materials. For these students where the pretests are used diagnostically, both the pre and post test are used. Based on pre and post test data obtained under these conditions for Language/Reading Sets 1-8, Spidal (internal document) reported that the correlation between correct responses on the pretest and correct answers on the post test varied from .89 to .96.

In summary, there is no systematic and adequate analysis of reliability in the test-retest sense of the term. Students exhibit wide variability on sampled pretests. Variability on post tests is reduced. For test-retest comparisons without intervening instruction, there appears to be stability in measures of central tendency but less stability of any individual scores under the same conditions.

Model For Evaluation - Description

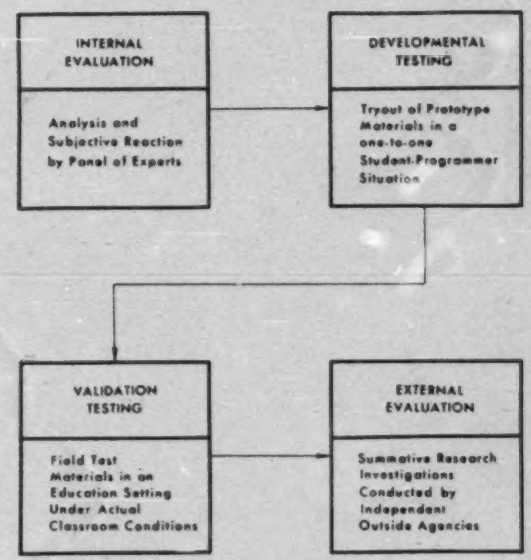
Evaluation of the Project LIFE materials was conceptualized as an integral part of the development/distribution process. The following flow chart suggests the intended relationships:



DEVELOPMENT PROCESS IN THE GE/LIFE PROGRAM

More specifically, the evaluation model called for four types of evaluation as described in the following chart. External evaluation was not, of course, under the control of Project LIFE.

TESTING AND EVALUATION OF THE GE/LIFE PROGRAM


INTERNAL EVALUATION
Analysis and Subjective Reaction by Panel of Experts
DEVELOPMENTAL TESTING
Tryout of Prototype Materials in a one-to-one Student-Programmer Situation
VALIDATION TESTING
Field Test Materials in an Education Setting Under Actual Classroom Conditions
EXTERNAL EVALUATION
Summative Research Investigations Conducted by Independent Outside Agencies

Project LIFE conceived that in the long run, information could be obtained which might permit assessment of the value of Project LIFE materials under a variety of conditions. The following diagram and listing of evaluation variables suggests the complexity of the evaluation model. While this model was conceived of, and described, it was not the specific plan of Project LIFE to undertake the collection of data for all cells of the matrix of variables. Rather, that as the result of the combination of Project LIFE evaluation activity and independent study, a picture of the systems effectiveness might be developed which would be congruent with the matrix.

Evidence of Test Validity

Validity is discussed in a variety of ways in the educational measurement literature. The development process as used by Project LIFE to a large extent

MAJOR EVALUATION VARIABLES

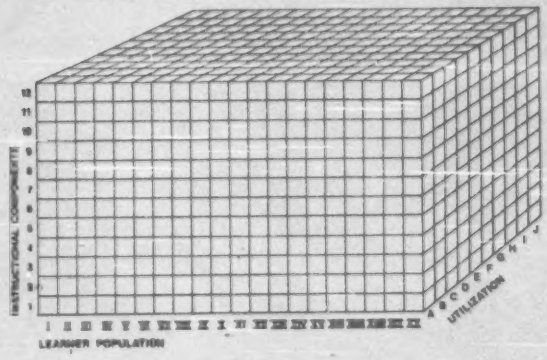
LEARNER POPULATION

I. Normal (5-6 yrs.)
II. Normal (7-8 yrs.)
III. Normal (9-12 yrs.)
IV. Normal (13-16 yrs.)
V. Bilingual – English as second language (4-10 yrs.)
VI. Bilingual – English as second language (11-adult)
VII. Illiterate Adult
VIII. Reading Disability (8-10 yrs.)
IX. Reading Disability (11-14 yrs.)
X. Reading Disability (15-18 yrs.)
XI. Hearing Impaired (4-6 yrs.)
XII. Hearing Impaired (7-8 yrs.)
XIII. Hearing Impaired (9-12 yrs.)
XIV. Hearing Impaired (13-adult)
XV. Emotionally Disturbed (7-10 yrs.)
XVI. Emotionally Disturbed (11-15 yrs.)
XVII. Educable Mentally Retarded (6-10 yrs.)
XVIII. Educable Mentally Retarded (11-adult)
XIX. Learning Disability (all ages)
XX. Brain Injured (all ages)

UTILIZATION

A. Supplemental
B. Core – Classroom
C. Core – Media Center
D. Core – Home
E. Core with preteaching
F. Prescriptive teaching
G. Clinical
H. Hospital
I. Small Group
J. Large Group

PARADIGM OF MAJOR EVALUATION VARIABLES



INSTRUCTIONAL COMPONENTS

1. Perceptual Training
2. Perceptual/Thinking
3. Language/Reading Level I
4. Language/Reading Level II
5. Language/Reading Level III
6. Language/Reading Level IV
7. Perceptual Training & Language/Reading
8. Perceptual/Thinking & Language/Reading
9. Perceptual Training, Perceptual/Thinking and Language/Reading
10. Total Language/Reading
11. Workbooks only
12. Workbooks and Filmstrips

---

insures content validity. That is, objectives are established which are expressed in operational terms. A set of measures is induced from these objectives. The Project utilizes subject matter consultants to review the objectives and the congruence between objectives and measurement items. Having agreed upon objectives and "validated" the relationship between measures and objectives, training frames and sequences are devised to enable a learner to perform the behavior required to respond appropriately to the predetermined measure. Internal review procedures are followed to insure that the content relationship between teaching frames and measurement items is one of congruence, hence content validity.

At another level, there is the concept of construct validity. The appropriate question here is something like: Given a definition of a domain of learning, does the test adequately sample behaviors within that domain? For example, considering the domain of visual perception, does a particular test adequately sample the domain of possible behaviors which comprise that domain. In test construction it becomes clear that the adequacy of mapping of the behaviors within the domain becomes critical to the concept of construct validity of a test instrument.

Project LIFE materials, as noted in earlier sections, bear a certain relationship to Guilford's theory on structure of the intellect. To the extent that the theory is accurate and Project LIFE objectives and measures are congruent with that theory, something might be inferred about construct validity. However, the usual approach to evaluation of construct validity is through statistical relationships between a given test and existing tests which are recognized to be valid measures of a particular domain.

In this latter sense of validity, there is little or no evidence of test validity for Project LIFE criterion tests. Few studies have attempted to evaluate the correlation between improvement (pre to post test change) on Project LIFE materials and performance change on existing commercially available tests.

Mitchell compared pre to post test gains on Project LIFE perceptual training materials criterion tests with pre to post test gains on the Frostig Perception test. Experimental and control groups of first and second grade language impaired students served as subjects. In this study, the control group was trained on a traditional perceptual training program. Over a nine-month period, both the experimental group (Project LIFE) and the control group (traditional) demonstrated statistically significant gains on the Frostig scores when the 5 subtest scores were combined by averaging (Type I ANOVA). At the same time, there was no significant variation in mean performance between the experimental and control groups on subtest scores (eye motor, figure ground, consistency of shape, position in space, and spatial relations) when contrasted using t tests.

In this study, unfortunately, performance on Project LIFE criterion tests was not reported (if taken) so that no comparison of criterion test performance with performance on the Frostig post test can be made. Less directly, data on the number of correct responses per filmstrip (for 30 filmstrips) was provided. All experimental students responded correctly at least 70 percent of the time across all filmstrips used. The average error rate was less than .20 frames per filmstrip. If it could be agreed that a very low error rate would predict high level performance on criterion measures, one might question why such success would not be reflected on the Frostig post tests.

Several possibilities exist pertaining to the low error rate previously identified. These include: (1) the Project LIFE materials were too easy (students had already mastered the target perceptual skills), or (2) the Frostig test measures something other than the skills taught by the Project LIFE materials, or (3) the statistical technique (t) lacked the necessary power. It is probable that both factors 1 and 3 were operative since the analysis of variance F value based on the combined Frostig scores reached significance but t scores for sub tests did not for any component score, or (4) the significant F value resulted from chance.

Holman used Project LIFE Language/Reading Units 1-8 with 6-8 year old Indian children from native language speaking homes. Gains were significant on Project LIFE criterion tests and on the Gates Reading Test. Alford and Ainsworth observed positive effects on a Spanish/English version of the Peabody Picture Vocabulary Test.

In summary, this reviewer is willing to assume content validity of criterion measures due to the nature of the materials development process used by Project LIFE but finds little evidence of construct validity of criterion tests used by Project LIFE. It should be noted that the reference to validation testing in Project LIFE literature has a quite different meaning from the term test validity. This term refers to the extent to which the materials assist students in reaching the objectives stated for the materials.

Synthesis of Evaluation Results

The following statements are based upon analysis of Project LIFE internal report data and the numerous independent studies. Where it is asserted that Project LIFE materials have been used successfully, the implication is at least that there was a significant improvement in performance as measured by Project LIFE criterion measures. Where a gain on some independent measure was demonstratable, that is noted. The many subjective comments and evaluations by users are not considered.

1. Project LIFE Visual Perceptual materials tend to achieve their stated purposes with

   a) hearing impaired children,

   b) bilingual (Spanish) children,

   c) multi-handicapped hearing impaired children,

d) language deprived children,

e) moderate to severely mentally retarded children, and

f) non-handicapped children.

2. Project LIFE Perceptual Thinking materials tend to achieve their stated purpose with

a) hearing impaired children, and

b) multi-handicapped hearing impaired.

(No relevant data is available with reference to other populations indicated in item 1 above.)

3. Project LIFE Language Reading materials tend to achieve their stated objectives with

a) hearing impaired students,

b) multi handicapped hearing impaired students,

c) moderately mentally retarded students,

d) bilingual students (Indian and Spanish),

e) aphasic adults, and

f) illiterate deaf adults.

4. Project LIFE language materials can be successfully used in a home setting without professional supervision.

5. For hearing impaired students with usable residual hearing, auditory supplementation of presented language stimuli may enhance learning (reduce error rate).

6. For hearing impaired students, Project LIFE language materials may result in improvement of expressive language performance (improved conformity to standard syntax in written language).

7. For hearing impaired students, Project LIFE language/reading materials tend to be superior to Sullivan Reading materials.

8. Pre-post gains on Project LIFE criterion tests are often substantial, and where they are not it tends to be a result of relatively high pretest scores. A diagnostic use of pretests and appropriate placement will enhance measured gains.

The following statement reflects non-systematic observations attendant to field evaluation experience.

1. Project LIFE materials are motivating to students (wanted more, envied experimental group, gave up recess to use materials, came in early, skipped movies, refused to come for therapy unless Project LIFE materials could be used, students waited in line, etc.).

2. Project LIFE materials are flexible in application (can be used before school; permit a productive division of labor between the system and teacher; teachers can work with other students on other skills; can be used diagnostically).

3. Some few students cannot work independently with the materials at the outset (random button pressing, ignoring feedback) and require teacher presence.

4. Use of the materials sometimes results in notable positive attitude and behaviorial change with "problem" students, presumably as a result of success with the Project LIFE system.

5. Use of extrinsic reinforcers (tokens, etc.) may be of added value to some students if students are aware of the contingencies - progress charts may be helpful in this regard.

6. When a student has difficulty with a particular filmstrip, he should be encouraged to proceed with other filmstrips, returning to the difficult one at an early next opportunity.

7. Project LIFE materials can be used effectively in a group presentation mode but without careful planning this will have negative affective results with "faster" students.

Two anecdotal reports, each relating to individual subjects were particularly impressive to this reviewer and are included to provide some indication of a dimension of possible effects which are not addressed by any of the field evaluation reports. These items are extreme samples of a positive nature. No balancing negative anecdotes were located except for the possibility of one situation where a program for autistic children discontinued the use of Project LIFE materials because they did not fit in with the program philosophy (detailed explanation was not provided).

The following anecdote was extracted from a report by a staff member at a center serving moderately to severely retarded adults. Participants ranged in age from 16 to 36 years of age.

> The most interesting participant in the program that we've been carrying on has been "Al," who has been referred to our program by the Department of Vocational Rehabilitation because of absolutely no activity in the special class and a local high school that he has attended. Al had over the past two years shown increasing diability and was for four months, before attending our program, at the university psychiatric hospital where a tentative diagnosis of catatonic schizophrenia had been made.
>
> The referral to the Activity Center came about because he had not been able to respond to any psychiatric therapy. Al had attended the center for approximately two months when the Project LIFE materials came. At that point and for the two months prior to his being engaged in the training program on Project LIFE, Al was sitting in a chair, kind of in a corridor, and had been absolutely inert. We had not been able to get him to respond at all. In addition, he had sat with head bent and one arm around his head, kind of enclosing himself with his body as it were.
>
> Al was invited to participate as one of the first members to join the group and he did start with very little reluctance which surprised us very much. He had a very interesting pretest. We found that although it certainly is a useful diagnosis statement we saw him run

through three of the pretests with many, many errors that we thought were brought about by a nervousness and a quickness in jumping around with the key. For example, when he made an error he would go back to punching all of the other keys to get the right answer, rather than referring back to the screen to think out the correct answer. We tried to get around this by reminding him always of the error count on the back and setting up a kind of a criteria for him to get through the process with as little errors as possible. He is always aware of our checking the error count and then he began checking his own error count. The motivation to not have errors and competition with other kids that were functioning at a lower level than he was but were actually coming out with less errors on the machine seem to help him to go a lot more slowly and to think out an answer before punching at the keys.

Al, who is perhaps the most intellectually gifted of our people in the sense that he is a high school student in Special Education, was the only one that seemed to need to go around and punch the other keys to find the correct answer. Other more retarded people were willing to take the extra step and to point and point again and to think out the answer rather than punch the other keys. Perhaps they are more obedient to the rules than Al. Also, perhaps Al might have figured out more readily how to, but it is a lot easier to punch the other keys than it is to think out the answer, but with Al this was only a problem initially. He soon got over that with our holding out, making as few errors as possible to him as a good thing.

Al had participated in no way in the program before Project LIFE. There was absolutely no interaction with staff; he did not speak; he sat in his chair at all times. Since working on the materials, however, we (note) the following: (1) After about a week and a half working on the materials, he began to assume the role of assistant, reading the labels on the containers, and pulling them out for the teacher for other students, (2) He also recorded and filled out pretest forms for other students and kept them in order. In addition, he also would locate

the plugs for the teacher; so he began to be involved in other kinds of responsible activities and had some interaction not only with the teacher but with other trainees, too.

We have not seen the hand around the head for about a month now, as of this date, January 27th. About two weeks ago he cleaned his fingernails because it was pointed out to him that he would no longer be able to use the machine unless he could begin to groom himself. (His fingernails were terrible and I doubt have been cleaned for months or years prior to this.) Al has also been working with a tutor, a homebound teacher through the public school system. We had not recommended this at the time of admission, feeling that the situation was overwhelming to Al and that we should wait until we saw some behaviors from Al that could be reinforced with discrimination, rather than overwhelming him with the homebound teacher and our program at the same time. However, Vocational Rehabilitation did provide his teacher, and according to his mother's report and the Vocational Rehabilitation counselor's report, Al is much more motivated and is doing much better with the teacher. He is beginning to have verbal interaction with the teacher and is doing work.

On January 27th, for the very first time, Al participated in a kick ball game and caught a ball. He has not (done this) in the time that he has been at the center; he has never held on; he has never participated in a group activity, especially a boisterous one, although he does sit at the table for lunch. This has been all that we have seen. He smiles, joined staff personnel for lunch for discussion period about the Activity Center, although he was not able to participate verbally. Al is essentially a very different person, although we do see him back in his chair at the times he is not working with Project LIFE materials. We're expecting and hoping for greater carryover, such as his participation in the kickball game.

The following summary was drawn from Project LIFE files (written by staff). Contact was made with the subject's parents to verify the accuracy of the summary.

> An eight-year-old girl, diagnosed as having a functional learning disability, was tutored at home during the summer of 1972 by her parents using the Project LIFE System. The parents used the Program Master and the three areas of Perceptual Training, Perceptual/Thinking, and Language Reading programmed filmstrips. During the period of the investigation, the girl steadily progressed through the instructional system in the order of perception, thinking, and language reading development.
>
> The materials served as a prescriptive base and remedial instruction. Minimal weaknesses were found in visual perception and in most areas of the perceptual thinking. However, the area that caused greatest difficulty was memory skill task. Extra emphasis was placed on those filmstrips within the sequences which related directly to memory. After the completion of the Perceptual Training and the Perceptual/Thinking materials, the young girl moved into the Language/Reading materials. She increased her vocabulary by a known quantity of 158 words. She learned to assemble new words into sentences in the course of the investigation. Also, she acquired a new confidence and self-acceptance which was attributed to the program learning materials.
>
> At the completion of the investigation, she asked to read books and she was willing to accept new "risks" of unknown words. This behavior was in clear contrast to her outlook at the beginning of the summer. Upon her return to school in the fall, her teacher noted that she was asking permission to take books home to read and was enthusiastic about all of her reading assignments in school.

Conclusion:

Project LIFE established an evaluation model. Certain elements of its evaluation plan, however, was never developed and executed with a high degree of precision. The developmental testing process appears to have been

carried out with consistency and effectiveness. The field evaluation effort, on the other hand, was plagued by difficulties, including field test site problems such as tester reports being incomplete (missing demographic data, missing time data, etc.). Further, execution of internal data management procedures was inconsistent (filing, coding, etc.). As a result, a significant portion of the data collected by Project LIFE is unusable for purposes of analysis.

While the above statements are true, it is important to point out that it was not Project LIFE's intent to evaluate the full impact of its system as a whole.

In retrospect, Project LIFE management did not have the philosophical commitment to operating on the basis of field evaluation data. Their system was designed to be responsive primarily to developmental testing feedback. There are few instances where significant action to modify materials were based on field evaluation results. A notable exception is the reorganization of the sequence of the perceptual training series.

A review of progress reports provides a rather clear pattern of lack of clarity in direction (goals) for the field evaluation function. Key staff members were frequently diverted by peripheral, but apparently compelling, activities which, although relevant to research and evaluation, did not move the Project toward priority objectives.

It seems apparent that this lack of priority on field evaluation and research was shared by the funding agency. In 1975, the Project developed more than 100 filmstrips. However, no funding provision was made for their field evaluation. Thus, the final units in the language series have not been tested in the field.

Nonetheless, a great amount of data has been accumulated, processed and analyzed. For those materials on which data has been analyzed, it can be said that the materials are effective in producing the target behaviors as specified in the objectives of the filmstrips.

Furthermore, independent studies evaluating Project LIFE materials have demonstrated positive effects with a variety of population samples other than hearing impaired. The consistency of positive results is impressive to this reviewer.

Whether the aim of Dr. Wooden, who conceived of the Project LIFE system, has or will be attained cannot be determined based on information collected to date. The development of the system is not yet complete although the phase of its federal support has ended. Given the current expectation of continued support through non-federal funds, it may be hoped that the aim can be achieved and demonstrated in some systematic manner.

THIS CHAPTER AND APPENDIX D PREPARED BY:
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VII. SYSTEMS DEVELOPMENT ACCOMPLISHMENTS

FY 1974-1975

Overview

FY 1975 (September 1, 1974 through August 31, 1975) was by far the most productive year for Project LIFE in terms of Systems Development accomplishments. The developmental activities included 116 filmstrips and a picture dictionary.

Of the filmstrips produced, 104 were classified as "programmed," since they employed the Project LIFE response matrix (code) and allowed for frame-by-frame student response and immediate feedback. These included 64 filmstrips comprising Level V of the Language Reading Series (Sets 33-40), and the Social Studies Series--"A Bird's-Eye View of the United States." The additional 12 filmstrips provided for language and reading experience in a non-programmed modality, and were grouped in a series labeled, "Great People Series."

The picture dictionary--entitled *My Life Pictionary: Nouns*-- produced in FY 1975 was another in a series of children's books designed to give the severely hearing impaired child a better understanding of the English language. The 126-page book identified, by picture and label, over 350 words. Additional descriptive information pertaining to this workscope component, along with the other developmental activities carried out in FY 197. , are provided in the following sections of this chapter.

My LIFE Pictionary--NOUNS

This is a basic book in a series of picture dictionaries to help provide children with a better understanding of the English language. Other books produced or projected for the series relate to such areas as verbs, multiple meanings, adjectives and adverbs.

My LIFE Pictionary--NOUNS is a student reference book containing more than 350 words. The words were selected from the vocabulary used in Levels I, II, and III of the Language/Reading Series of the General Electric/Project LIFE Program. The nouns are pictured and labeled in full illustrations on pages 1-30. Each illustration relates to a specific area in a child's life such as home, school, community, etc. The nouns are then presented individually on pages 32-121 using a sentence and picture with each one. The book can be used for a variety of different purposes including independent study, a ready reference, and a teaching resource.

Great People Series (Biographical Abstracts)

1. *NEIL ALDEN ARMSTRONG,* a former astronaut, will long be remembered as the first person ever to walk on the Moon. Armstrong, who was born in 1930, developed a keen interest in flying at an early age and got his pilot's license at age 16. Later he served as a pilot in the U.S. Navy and as a test pilot for the X-15 and other aircraft at NASA. After he became an astronaut, Mr. Armstrong piloted the first manned spacecraft to dock with an artificial satellite. He was commander of *Apollo 11* which carried the men who first set foot on the Moon. When Mr. Armstrong left NASA, he became the Professor of Aerospace Engineering at the University of Cincinnati.

2. *JOHN JAMES AUDUBON* was a great artist and a self-taught naturalist and ornithologist. He was born April 26, 1785, at Les Cayes in what is now the Republic of Haiti. Audubon spent his childhood in France. When he was 18, he came to the United States to live at his father's estate near Philadelphia. After many unsuccessful business ventures, Audubon decided to devote his life to painting birds and other animals. His best-known work, *The Birds of America,* contained 435 life-size illustrations of birds in their natural surroundings. Audubon died in New York City in 1851. The National Audubon Society was named in his honor. He was elected to the Hall of Fame for Great Americans in 1900.

3. *LUTHER BURBANK* was a well-known horticulturist who spent his life (1849-1926) improving existing plants and producing new ones. He used the process of selection and the process of cross-breeding in his work with plants. He has been called a plant magician and plant wizard because of the unusual things he accomplished--such things as developing white blackberries and thornless cactus plants or growing 526 varieties of apples on the same tree. Mr. Burbank opened his gardens, where he carried on thousands of experiments, to visitors. Many people came to see them because of the interesting plants there.

4. *WILLIAM F. CODY* lived from 1846 to 1917 and is better known as BUFFALO BILL. He was given this nickname after he supplied a railroad company with fresh buffalo meat for its workers. Bill began working when he was only 11 years old, driving herds with wagon trains. As a teenager he helped carry mail across the western part of the United States as a rider--the most famous one--for the Pony Express. Later, he started his "Wild West Show" which traveled in the United States and Europe. The show was based on Cody's life and experiences on the plains.

5. *JACQUES—YVES COUSTEAU* was born in France in 1910. He is an outstanding undersea explorer who has contributed to people's understanding and appreciation of the underwater world. Cousteau helped invent the Aqua-Lung, remove sunken ships and mines after World War II, test and improve diving equipment and techniques, explore sunken ships for treasures, and explore and photograph different parts of the Earth's ocean. His explorations and experiences have been shared through his books, movies, and television shows.

6. *AMELIA EARHART* was a brave and daring aviator who disappeared in 1937 during her around-the-world flight. No trace of her or her plane has ever been found. Born in Kansas in 1898, Amelia Earhart became interested in flying during the First World War. After the war she learned to fly and acquired many aviation "firsts." Amelia Earhart was the first woman to cross the Atlantic Ocean in an airplane. She was the first woman to make a solo trans-Atlantic flight. She was the first woman to be awarded the Distinguished Flying Cross by the Congress of the United States. Amelia Earhart was also the first woman to fly an autogiro. Amelia Earhart's disappearance remains a mystery.

7. *BENJAMIN FRANKLIN* had many extraordinary talents. Born in Boston, Massachusetts in 1706, he worked as an apprentice in his brother's printing shop. Later, Benjamin Franklin started his own printing business in Philadelphia where he published *The Pennsylvania Gazette* and his popular *Poor Richard's Almanac*. Benjamin Franklin conducted scientific experiments with electricity. He charted the movement of storms. He invented the lightning rod, bifocal glasses, and the Franklin stove. He established Philadelphia's first hospital and the first lending library in America. Benjamin Franklin is best remembered as a diplomat and statesman. He signed four key documents in American history: the Declaration of Independence, the Treaty of Alliance with France, the Treaty of Peace with Great Britain, and the Constitution of the United States. He died in Philadelphia in 1790.

8. *JAMES CLEVELAND "JESSE" OWENS* was called the "world's fastest athlete" when he attended Ohio State University. His greatest collegiate triumph was in 1935 at Ann Arbor, Michigan, where he set world records in the 220-yard race, hurdles, and long jump and tied the world's record for the 100-yard dash. At the 1936 Olympics in Berlin, Germany, Hitler "snubbed" him. Jesse Owens went on to win gold Olympic medals for the long jump, the

100- and the 200-meter races, and for leading the United States 400-meter relay team to victory. That same year, Jesse Owens won the Associated Press "Athlete of the Year" award. The Alabama sharecropper's son was born in 1913. Jesse Owens has shared the American idea of sportsmanship and competition with people everywhere.

9. *LOUIS PASTEUR* was born in 1822 and died in 1895. This world famous 19th century French scientist made many important contributions to medicine, chemistry, and industry. His experiments provided valuable information concerning the spread and control of germs and diseases. The pasteurization process and rabies vaccine which he developed have saved countless lives through the years. His work led to the development later of other vaccines to help control various human diseases. The Pasteur Institute in Paris, established in his honor before his death, is still an important research center.

10. *THEODORE ROOSEVELT* was the youngest person ever to become President of the United States. His likeness on Mount Rushmore represents 20th century America. Theodore Roosevelt was born in New York City in 1858. He led the Rough Riders, a cavalry regiment he organized, in the Spanish-American War. After the war, Theodore Roosevelt was elected Governor of New York and then Vice President of the United States. He became the 26th President on September 14, 1901, after President McKinley was assassinated. President Roosevelt helped to build a stronger America. He negotiated land for the Panama Canal. He believed in conserving America's natural resources and was interested in the welfare of every American. Theodore Roosevelt was the first American to receive the Nobel Prize for Peace. He died in 1919.

11. *JAMES WATT* (1736-1819) was an important Scottish inventor. His most outstanding achievement was improving the steam engine by adding a condenser and making it a more useful and practical machine. After Watt patented his steam engine in 1769, steam power came to be used for such things as steamboats, steam locomotives, and steam turbines to generate electricity. Although Mr. Watt didn't discover that steam had power, some people believe that he opened the door to the steam age.

12. *GEORGE WESTINGHOUSE* greatly increased the safety of railroad travel by inventing the air brake and a system of railroad signal lights. Railroads all over the world use air brakes based on the original Westinghouse design. George Westinghouse also introduced alternating current for electric

lights while Westinghouse generators helped to supply the electricity people used. George Westinghouse was born in 1856. As a boy, he liked to work in his father's machine shop in Schenectady, New York. Before his death in 1914, George Westinghouse had been issued over 400 patents for inventions, and he organized 60 companies. Many countries honored him for his inventions. In 1955, he was elected to the Hall of Fame for Great Americans.

Language Reading Series: Level V (Sets 33-40)

Set 33 (WEATHER)

Overview: Provides basic information about weather. The four main elements of weather, how they are measured and reco.ded, the characteristics and movement of air masses and pressure areas, and some services of the United States Weather Bureau are included.

Section A (42 Frames): Introduces the four main elements of weather--wind, moisture, temperature, air pressure--and the instruments which measure them. The difference between humidity and precipitation is presented along with other basic weather information such as warm air is lighter than cold air.

Section B (40 Frames): Air masses--large bodies of air with similar characteristics--and fronts are introduced. The movement and characteristics of maritime, continental, polar, and tropical air masses are discussed as well as the effect on weather when two unlike air masses meet.

Section C(40 Frames): Provides additional information about pressure areas and winds or movement of air. Ways of identifying high and low pressure areas on weather maps as well as the normal movement of pressure areas are presented.

Section D (40 Frames): Various storms and their effects, such as the destructive capabilities of tornadoes and hurricanes, are discussed. Also included are thunderstorms, ice storms, blizzards, duststorms, and the effects of droughts or prolonged dry weather.

Section E (40 Frames): Presents several services provided by the United States Weather Bureau. The science of weather or meteorology is traced from its earliest beginnings through modern technology. Means of collecting weather data, recording it on weather maps, and using it to forecast weather are discussed.

Section F (40 Frames): Presents some weather signs and superstitions and the use of the Beaufort Scale to estimate wind speed. Superstitions having no effect on the weather are identified. Signs which are based on weather facts and can be used to predict probable weather are also identified.

Section G (Test--36 Frames): Provides a comprehensive test of significant weather concepts taught in the set. This section can be used as a pre-test, a post-test, or for review purposes.

Section SS33 (Franklin--30 Frames): The weather concepts of Set 33 are extended and reinforced by this biographical sketch of *Benjamin Franklin*. He was a scientist and meteorologist as well as a diplomat, statesman, inventor, and author.

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Set 34 (PLANTS)

Overview: Provides basic information about plants. Presents information about the types of plants, the plant groups, the different parts of plants, reproduction, photosynthesis, and the effects of the environment and animals on plants.

Section A (39 Frames): Introduces the two main types of plants, the four plant groups, and some typical plant features. Plants living mostly in water and on land are differentiated, and the simplest and largest groups of plants are identified.

Section B (40 Frames): Presents the parts of flowering plants--roots, stems, leaves, and flowers--, different parameters of plant reproduction, and the necessary ingredients for photosynthesis.

Section C (36 Frames): Presents environmental conditions most suitable to the different classifications of plants. Also, the effects of bacteria, parasites, and cross-pollination among plants are discussed.

Section D (37 Frames): Presents some of the relationships between plants and animals. Teaches that animals use plants for food and protection but not for decorative purposes, and that animals help plants to reproduce.

Section E (37 Frames): Provides an overview of the different ways in which people use plants. It points out that the most important use of plants by people is for food, though plants are also used for decorative purposes and to stop soil erosion.

Section F (39 Frames): Identified and discusses the various products that are derived from plants. Some of the products listed include: lumber, paper, cotton, penicillin, and petroleum.

Section G (Test--39 Frames): Provides a comprehensive test of the significant plant concepts taught in the set. This section can be used as a pre-test, a post-test, or for review purposes.

Section SS34 (Burbank--30 Frames): The plant concepts taught in Set 34 are extended and reinforced by this biographical sketch of *Luther Burbank*, a famous plant breeder and horticulturist who developed many new plants and improved others.

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Set 35 (THE ANIMAL KINGDOM)

Overview: Provides basic information about the animal kingdom. Included are some of the characteristics and classifications of animals, various habitats and defense mechanisms, as well as the relationship of plants and animals.

Section A (40 Frames): Introduces the animal kingdom by discussing some characteristics of animals such as their ability to move about, to feed on plants or other animals, to react to stimuli, and to stop rapid growth at adulthood. The meanings of herbivorous, carnivorous, and omnivorous are also presented.

Section B (40 Frames): Several classifications of animals are presented. Included, among others, are protozoans, worms, joint-legged animals, soft-bodied animals, and vertebrates. Provides basic information about each classification as well as about mammals, warm- and cold-blooded animals.

Section C (40 Frames): Various habitats of animals are discussed, and animals which normally live in each are identified. Basic facts about hibernating, migrating, and aestivating animals are presented as well as information about some wild animals making permanent homes.

Section D (40 Frames): Several ways that animals defend themselves are presented. Included are defense by flight, fighting, or camouflage. Protective coloration is identified as one form of camouflage. Other defense mechanisms such as armor and chemicals are also discussed.

Section E (40 Frames): Provides information about the relationship of plants and animals--why one cannot survive without the other. The need of oxygen by animals is discussed and respiration is defined. Some animals which are harmful to people are identified.

Section F (40 Frames): Presents several ways that people and animals help one another. The use of animals for food, transportation, protection, clothing, and for scientific research is discussed. Selective breeding as a way of improving existing animals or creating new breeds is presented as well as the protection of wild animals by laws and wildlife refuges.

Section G (Test--39 Frames): Provides a comprehensive test of the significant facts which have been presented about the animal kingdom. This test can be used as a pre-test, post-test, or for review.

Section SS35 (Audubon--31 Frames): Presents a biographical sketch of *John James Audubon* whose life-size paintings of North American birds in their habitats increased people's knowledge of wildlife and the need for protecting it.

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Set 36 (WATER AND THE SEA)

Overview: Provides basic information about water and the importance of it to living organisms. This set describes water, its properties, bodies of water, and the water cycle.

Section A (40 Frames): Defines and describes water and discusses some of its important properties. The various kinds of bodies of water are presented, including oceans, gulfs, rivers, lakes, and springs.

Section B (40 Frames): Presents information about the Earth's ocean. Included is a discussion of the greatest ocean depth, a fathom, sounding, currents, waves, and tides.

Section C (40 Frames): Describes the Earth's water cycle and some of the different water supplies for people. Defines water cycle terms such as precipitation, circulation, desalination, evaporation, and purification.

Section D (40 Frames): Teaches the importance of water to the human body. Also presented in this section are some of the various uses of water--irrigating, drinking, generating electricity, and a means of transporting people.

Section E (40 Frames): Presents the importance of water to the plant and animal kingdoms. Drinking as the most important use of water by animals, seaweeds as the longest plants, and the identification of some animals which live in or near water are also included in this filmstrip.

Section F (40 Frames): The importance of Earth's waters for present or potential food, minerals, and other products is presented. Identifies fish as the most widely used food from water, petroleum as a mineral beneath the ocean, plankton as floating animals and plant life, and hydroponics as growing plants without soil.

Section G (Test--38 Frames): Provides a comprehensive test of the significant water concepts taught in the set. This section can be used as a pre-test, a post-test, or for review purposes.

Section SS36 (Cousteau--30 Frames): The water concepts taught in Set 36 are extended and reinforced by this biographical sketch of *Jacques-Yves Cousteau*, who invented the Aqua-Lung, and is a world famous underseas explorer.

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Set 37 (CONSERVATION OF RESOURCES)

Overview: Provides information about the conservation of natural and human resources. Discusses the need for such conservation as well as several recommended conservation practices.

Section A (41 Frames): Introduces the conservation of resources. Various natural resources are identified, and conservation is defined as the wise use of resources. The terms environment and ecology are also defined.

Section B (40 Frames): Discusses the effects of air and water pollution on living and nonliving things. Identifies pollution as a needless waste of air and water, and the control of pollution as one goal of conservationists.

Section C (40 Frames): Presents the need for soil conservation and some recommended conservation practices to prevent loss of soil through erosion. Identified crop rotation as a way of keeping soil fertile, and overgrazing as damaging to grasslands.

Section D (40 Frames): Presents the importance of forest and wildlife conservation. Discusses the renewal of forests by good management, such as selective cutting and reseeding. Also discusses the conservation of wildlife through improved habitats, controlled hunting and fishing, and wildlife refuges.

Section E (40 Frames): Stresses the need for conserving minerals, which are nonrenewable resources. Minerals are classified as fuels, metals, or non-metals. Rocks are identified as masses of inorganic minerals. Also discusses the formation of fuels from organic matter.

Section F (40 Frames): Provides information about human resources--people, their products and services. People are identified as the most important resource of any country. The effects of noise, air, and water pollution and other environmental conditions on people are discussed.

Section G (Test--37 Frames): Provides a comprehensive test of the conservation of human and natural resources as presented in Set 37. This test may be used as a pre-test, a post-test, or for review purposes.

Section SS37 (Roosevelt--31 Frames): Presents a biographical sketch of *Theodore Roosevelt*, a man who was deeply concerned about the welfare of people and the conservation of natural resources, and extends and reinforces the concepts of conservation presented in Set 37.

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Set 38 (HEALTH AND THE HUMAN BODY)

Overview: Introduces the human body and its well-being. The makeup of the body; its systems and their functions; the senses; proper care of some body parts; important factors in physical, mental, and emotional health; and public health are included.

Section A (41 Frames): The makeup of the human body is presented. Cells, tissue, the skeleton with its different kinds of bones, the skin, and the muscles--voluntary and involuntary--are discussed. Some of the body's systems and their functions are introduced.

Section B (40 Frames): The nervous, digestive, respiratory, circulatory, urinary, and reproductive systems are discussed. Included are the parts which make up the systems and the functions of the systems.

Section C (40 Frames): The body's senses--sight, hearing, smell, taste, touch, balance, muscle, deep body--are presented. The functions of the senses, the body parts related to the senses, and good rules for the care of eyes, ears, teeth, skin, and hair are given.

Section D (40 Frames): The meaning of good health is identified as the well-being of the body, mind, and emotions. The importance to physical health of proper kinds and correct amounts of food, regular and moderate exercise, sufficient sleep or rest, and observing safety rules is shown.

Section E (40 Frames): Continues the discussion of physical well-being. Ways of abusing or damaging the body, and the contributions of physicians and public health groups to good health through the prevention, control, and treatment of diseases are presented.

Section F (40 Frames): Mental and emotional health as part of the well-being of the human body are discussed. Some good mental habits to keep the mind healthy are given. Feelings or emotions and ways of dealing with them are identified. Basic needs--love, security, and independence--are included.

Section G (Test--36 Frames): Provides a comprehensive test of important concepts concerning health and the human body taught in the set--to be used as a pre-test, post-test, or for review purposes.

Section SS38 (Pasteur--30 Frames): Extends the theme of health and the human body by presenting a biographical sketch of *Louis Pasteur*, the French scientist whose development of the process of pasteurization and a rabies vaccine have saved thousands of lives.

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Set 39 (THE WORLD OF SPORTS)

Overview: Provides basic information about sports. Included are various kinds of athletics and the history of the Olympics, ball games and their origin, sports which evolved from acts of warfare or occupations, and sports associated with means of transportation.

Section A (40 Frames): Defines sports as pleasant physical activities. Introduces various types of sports such as: team, individual, combative, recreational, organized, athletics, amateur, professional, intramural, and intercollegiate.

Section B (40 Frames): Presents the history of the Olympic games. Defines athletics as sports which match the contestants' skills in speed, strength, or springing. Provides information about various kinds of athletics.

Section C (40 Frames): Provides information about various kinds of ball games such as basketball, football, golf, baseball, badminton, bowling, volley ball, as well as the origin of ball games.

Section D (40 Frames): Discusses sports which evolved from the arts of warfare such as archery, fencing, boxing, judo, wrestling, and marksmanship. Also presents some sports which evolved from occupations.

Section E (40 Frames): Presents various sports associated with means of transportation. Included among others are horse and automobile racing, skiing, bobsledding, and boating.

Section F (40 Frames): Presents information about popular recreational sports. Identified bowling and swimming as the most popular participant sports. Some famous athletes are identified, and the meaning of sportsmanship is discussed.

Section G (Test--36 Frames): Provides a comprehensive test of significant facts about sports presented in the set. This section can be used as a pre-test, a post-test, or for review purposes.

Section SS39 (Owens--31 Frames): This biographical sketch of *Jesse Owens* extends and reinforces the concepts of sports and sportsmanship which were presented in Set 39. Snubbed by Hitler at the 1936 Olympics, Jesse went on to win four gold medals.

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Set 40 (THE UNIVERSE AND OUR SOLAR SYSTEM)

Overview: Introduces the universe, its meanings, past beliefs, and present knowledge of it. The solar system and its various bodies--sun, planets, moons, asteroids, meteors, comets--and important events and explorations of the space age are presented.

Section A (40 Frames): A brief sketch of ideas concerning the universe and the solar system from ancient times to the present is given. Contributions of such people as Copernicus, Galileo, and Newton; the use of telescopes and radio telescopes for studying the universe; and the meaning of light years are included.

Section B (40 Frames): Information about the solar system is presented. The Sun as the center and only star in the solar system, the other heavenly bodies--planets, moons, asteroids, meteors, comets--of the system, the planets' orbits, and gravitation are included.

Section C (40 Frames): Earth and the Moon--the most familiar planet and Earth's only natural satellite--are discussed. Information relating to size, shape and makeup of Earth and the Moon, and the causes of seasons, tides, days and nights, and eclipses is given.

Section D (40 Frames): Information concerning size, distance from the Sun, surface conditions, length of day and year, and moons (if any) is given for Mercury, Venus, Mars, and Jupiter. Similarities between Mars and Earth are included.

Section E (40 Frames): Saturn, Uranus, Neptune, and Pluto are presented. In addition to size, distance from the Sun, length of day and year, and number of moons for each, such things as Saturn's rings, the first planet discovered with a telescope, and the possibility of undiscovered planets are discussed.

Section F (40 Frames): The space age, from its beginning in 1957 to the present, is discussed. Included are such historical events as the first space vehicles launched by Russia and the United States, the first Americans in space, the first person to walk on the Moon, explorations by unmanned vehicles, and *Skylab*.

Section G (Test--37 Frames): Provides a comprehensive test of significant information concerning the universe and our solar system taught in the set--to be used as a pre-test, post-test, or for review purposes.

Section SS40 (Armstrong--30 Frames): Extends the space theme by presenting a biographical sketch of *Neil Armstrong*, a well-known astronaut, who was the first person to walk on the Moon.

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Social Studies Series (A Bird's-Eye View of the United States)

Set 1: Ten (10) Filmstrips--Teaches the location of the United States, as well as its major waterways, landforms, national parks, regions, and trust territories.

Set 2: Ten(10) Filmstrips--Teaches the names, shapes, and locations of the 50 states within the United States.

Set 3: Ten(10) Filmstrips--Teaches the 50 state capitals of the United States.

Set 4: Ten(10) Filmstrips--Teaches some of the major cities within the 50 states of the United States (other than the capitals).

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BEHAVIORAL OBJECTIVES (Social Studies Series)

Set 1, Section A: The student will identify Washington, D.C., as the Capital of the United States, and the location of the U.S. in relation to countries, continents, and hemispheres of the Earth.

Set 1, Section B: The student will identify six major waterways within or forming the boundaries of the United States by their names or locations on a map.

Set 1, Section C: The student will identify six landforms of the United States by their names or locations on a U.S. map.

Set 1, Section D: The student will identify the region which contains the Northeastern States, by location, name or description, and some of the leading industries and products of the area.

Set 1, Section E: The student will identify the region which contains the Southern States by location, name or description, and some of the leading industries and products of the area.

Set 1, Section F: The student will identify the region which contains the North Central States by location, name or description, and some of the leading industries and products of the area.

Set 1, Section G: The student will identify the region which contains the Western States by location, name or description, and some of the leading industries and products of the area.

Set 1, Section H: The student will match five national parks with their location on a U.S. map.

Set 1, Section I: On a world map, the student will identify the locations of four countries or groups of islands which have some special association or affiliation with the United States.

Set 1, Section J: To provide a comprehensive test on the location of the United States, some of its waterways, landforms, national parks, and trust territories, and its four major regions, to be used for diagnosis, evaluation and/or review of the content in Set 1.

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Set 2, Section A: The student will match the names of the six New England States in the northeastern region with their respective shapes.

Set 2, Section B: The student will match the names of the six Middle Atlantic States in the northeastern region with their respective shapes.

Set 2, Section C: The student will match the names of the seven Southeast States in the southern region with their respective shapes.

Set 2, Section D: The student will match the names of the six South Central States in the southern region with their respective shapes.

Set 2, Section E: The student will match the names of the six Great Lakes States in the north-central region with their respective shapes.

Set 2, Section F: The student will match the names of the six Plains States in the north-central region with their respective shapes.

Set 2, Section G: The student will match the names of the seven Mountain States in the western region with their respective shapes.

Set 2, Section H: The student will match the names of the six Far West States in the western region with their respective shapes.

Set 2, Section I: To provide a region-by-region test on the recognition of states by their shapes and locations within the context of regional maps, to be used for diagnosis, evaluation and/or review of the content in Set 2.

Set 2, Section J: To provide a comprehensive test on the recognition of states by their shapes and locations within the context of the entire United States may, to be used for diagnosis, evaluation, and/or review of the content in Set 2.

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Set 3, Section A: The student will match the names of the six New England States in the northeastern region with the names of their capitals.

Set 3, Section B: The student will match the names of the six Middle Atlantic States in the northeastern region with the names of their capitals.

Set 3, Section C: The student will match the names of the seven Southeast States in the southern region with the names of their capitals.

Set 3, Section D: The student will match the names of the six South Central States in the southern region with the names of their capitals.

Set 3, Section E: The student will match the names of the six Great Lakes States in the north-central region with the names of their capitals.

Set 3, Section F: The student will match the names of the six Plains States in the north-central region with the names of their capitals.

Set 3, Section G: The student will match the names of the seven Mountain States in the western region with the names of their capitals.

Set 3, Section H: The student will match the names of the six Far West States in the western region with the names of their capitals.

Set 3, Section I: To provide a region-by-region test on the recognition of the names of state capitals within the context of regional maps, to be used for diagnosis, evaluation and/or review of the content in Set 3.

Set 3, Section J: To provide a comprehensive test on the recognition of the names of state capitals within the context of the entire United States map, to be used for diagnosis, evaluation and/or review of the content in Set 3.

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Set 4, Section A: The student will match the names of the six New England States in the northeastern region with the names of some of their major cities.

Set 4, Section B: The student will match the names of the six Middle Atlantic States in the northeastern region with the names of some of their major cities.

Set 4, Section C: The student will match the names of the seven Southeast States in the southern region with the names of some of their major cities.

Set 4, Section D: The student will match the names of the six South Central States in the southern region with the names of some of their major cities.

Set 4, Section E: The student will match the names of the six Great Lakes States in the north-central region with the names of some of their major cities.

Set 4, Section F: The student will match the names of the six Plains States in the north-central region with the names of some of their major cities.

Set 4, Section G: The student will match the names of the seven Mountain States in the western region with the names of some of their major cities.

Set 4, Section H: The student will match the names of the six Far West States in the western region with the names of some of their major cities.

Set 4, Section I: To provide a region-by-region test on the recognition of the names of some of the major cities within the context of regional maps, to be used for diagnosis, evaluation and/or review of the content in Set 4.

Set 4, Section J: To provide a comprehensive test on the recognition of the names of some of the major cities within the context of the entire United States map, to be used for diagnosis, evaluation and/or review of the content in Set 4.

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Appendix A

Listing of Project LIFE Field Test Centers

Field Test Centers

Mr. Randall J. Westbrook, Teacher
Birmingham Speech and Hearing Center
2801 Clairmont
Birmingham, Alabama 35205

Mr. Al Simmons, Media Specialist
Arkansas School for the Deaf
2400 North Markham
Box 3811
Little Rock, Arkansas 72205

Mr. Gerald Pollard, Principal
Lower School
California School for the Deaf
2601 Warring Street
Berkeley, California 94704

Mr. Seig Efken, Media Consultant
Los Angeles County
Southwest School for the Hearing Impaired
4110 West 154th Street
Box 671
Lawndale, California 90260

Mrs. Virginia McKinney
President - Director
Photo-School Films, Inc.
3770 Tracy Street
Los Angeles, California 90027

Ms. Kay Sanger, Media Instructor
John Tracy Clinic
806 West Adams Boulevard
Los Angeles, California 90007

Mr. Joel Ziev, Educational Media Director
American School for the Deaf
139 North Main Street
West Hartford, Connecticut 06107

Mrs. Tomiko Yamashita
Supervising Teacher
Hawaii School for the Deaf & Blind
3440 Leahi Avenue
Honolulu, Hawaii 96815

Dr. Patricia Scherer, Director
Education of Hearing Impaired
Northwestern University
F. Searle Communication Disorders Building
Evanston, Illinois 60201

Mr. Robert Van Dyke, Director
South Metropolitan Association
for Low Incident Handicapped
250 West Sibley Boulevard
Dolton, Illinois 60426

Mr. Bill Stark, Director
School Media Director
Illinois School for the Deaf
125 Webster
Jacksonville, Illinois 62650

Ms. Fern Feder
Educational Coordinator
West Suburban Association for
Hearing Handicapped
141 Green Valley Drive
Lombard, Illinois 60148

Mr. Lester Stanfill, Director
Instructional Media Center
Indiana School for the Deaf
1200 East 42nd Street
Indianapolis, Indiana 46205

Mr. Arthur Ruiter
Director of Children's Services
Hope Haven
1800 Nineteenth Street
Rock Valley, Iowa 51247

Mrs. Sandra Myers, Teacher
Hard of Hearing Class
Acadia Parish School Board, ESEA
North Crowley Elementary
Crowley, Louisiana 70526

Mr. Robert E. Kelly
Assistant Superintendent
Governor Baxter State School for the Deaf
P. O. Box 799
Portland, Maine 04104

Ms. Mary Ellen McCann*
Coordinator of Classes for the
Hearing Impaired
Capitol Heights Special Center
6037 Central Avenue
Capitol Heights, Maryland 20027

Miss Margaret Kent, Principal
Maryland School for the Deaf
101 Clarke Place
Frederick, Maryland 21701

Ms. Karen Thomas, Field
Representative
Northeast Regional Media Center
for the Deaf
University of Massachusetts
Thompson Hall
Amherst, Massachusetts 01002

Dr. George Laves, Assistant Principal
Michigan School for the Deaf
Flint, Michigan 48502

Mrs. Mary Campbell, Supervisor
Monroe City Program for the
Hearing Impaired
Ida Public Schools
Ida, Michigan 48150

Mrs. Jane Johnson
Speech Pathologist
4220 Hilton Place
Lynchburg, Virginia 24503

Mr. Milton Yoder, Media Specialist
Virginia School for the Deaf
East Beverly Street
Staunton, Virginia 24401

Mr. Neil F. Lowell, Principal
Wisconsin School for the Deaf
309 West Walworth Avenue
Delavan, Wisconsin 53115

Dr. Leo Dicker
Program for the Education of the Deaf
University of Wisconsin
Milwaukee, Wisconsin 97361

Sister Mary Claude, Teacher
St. John's School for the Deaf
3680 South Kinnickinic Avenue
Milwaukee, Wisconsin 53207

**8 Field Test Classes Represented*

Mr. Todd Hoover, Research Associate
Midwest Regional Media Center
for the Deaf
University of Nebraska
Lincoln, Nebraska 68508

Dr. Charles M. Jochem
Marie H. Katzenbach School
for the Deaf
Sullivan Way
West Trenton, New Jersey 08625

Mrs. Gay Alford, Director
Responsive Environment Program
for Spanish-American Children
Clovis Municipal Schools
420 West Grand Avenue
Clovis, New Mexico 88101

Mr. Robert Edwards, Curriculum
Specialist
Southwest Regional Media Center
for the Deaf
Box 3 AW
Las Cruces, New Mexico 88001

Mr. Gary J. Loysen, Media Coordinator
Rochester School for the Deaf
1545 St. Paul Street
Rochester, New York 14621

Miss Josephine Merolla
Caritas Day School for the Deaf
984 North Village Avenue
Rockville Center, New York 11570

Miss Grace Wilson, Director
of Curriculum
New York State School for the Deaf
712 North Madison Street
Rome, New York 13440

Mr. Charles Mead
Computer Based Project
Prescott School
410 East Willow Street
Syracuse, New York 13203

Mrs. Ann H. Aldridge
Educational Director
North Carolina School for the Deaf
Highway 64, South
Morganton, North Carolina 28655

Mr. John Opperman, Coordinator
Special Education IMC
A. G. Bell School for the Deaf
11815 Woodland Avenue
Cleveland, Ohio 44120

Mrs. Jean Schuler
Director of Speech Pathology
Division of Physical Medicine
Ohio State University Hospital -
Dodd Hall
472 West Eighth Avenue
Columbus, Ohio 43210

Mrs. Jean C. Ankrum, Supervisor
Deaf Classes
Pioneer School
Main Street
Zanesville, Ohio 43701

Mr. Charles Pyne, Media Coordinator
Regional Facility for the Deaf
9015 S.E. Rural
Portland, Oregon 97266

Mrs. Dorothy McCarr, Principal
Oregon State School for the Deaf
999 Locust Street, N.E.
Salem, Oregon 97310

Mrs. Esther Shuster, Director
Instructional Media Center
Western Pennsylvania School
for the Deaf
300 Swissvale Avenue
Pittsburgh, Pennsylvania 15218

Dr. Henry W. Fay, Director
Teaching and Learning Resources
Centennial School District
McDonald Elementary School
Reeves Lane
Warminster, Pennsylvania 18974

Mrs. Mary K. Smith*
Language Consultant
Special Education
Knoxville City Schools
101 East Fifth Street
Knoxville, Tennessee 37917

Ms. Virginia Herzog
Curriculum Coordinator
Project for Individualizing
Instruction for the Deaf
Callier Speech & Hearing Center
1966 Inwood Road
Dallas, Texas 75235

Mr. Frank Powell, Director
Dallas County Wide Day School
for the Deaf
5828 Mockingbird Lane
Dallas, Texas 75206

Mrs. Mattie Box, Supervisor
Tarrant County Day School
for the Deaf
2310 Alston
Fort Worth, Texas 76110

Sister Suzanne Hall, Director
Kennedy Institute
801 Buchanan Street, N.E.
Washington, D.C. 20017

Dr. Enid Wolfe, Director
Developmental Center for Special
Education
1619 M Street, N.W.
Washington, D.C. 20036

Mr. D. M. Plummer, Principal
Manitoba School for the Deaf
500 Shaftsbury Boulevard
Winnipeg, Manitoba, Canada

Ms. Rosanne S. Ada, Coordinator
Guam School for the Deaf
and the Blind
Department of Education
Box 2947
Agana, Guam 96910

Mr. Thomas Clark, Assistant Professor
Utah State University
Department of Communicative Disorders
Logan, Utah 84321

Dr. Dallas R. Crowe, Director
Fupil Personnel Services
Charlottesville Public Schools
406 Fourteenth Street, N.W
Charlottesville, Virginia 22903

Southern Regional Media Center for the Deaf, University of Tennessee

Appendix B

Partial Listing of Project LIFE Consultants

CONSULTANTS

From 1963 through 1975, Project LIFE had input from several hundred authorities in the fields of educational technology, deafness, linguistics, special education, marketing, and various phases of instructional material development. In addition, several questionnaires were completed during the 1940's and 1950's by scores of recognized authorities interested in a comprehensive mediated program to significantly increase the language-learning rate of deaf children. A partial listing of the consultants used by Project LIFE during the 12 year governmental funding period is provided below. *

1. Mrs. Edna Adler, Specialist
   Deaf and Hard of Hearing
   Office of Deafness and
   Communicative Disorders
   Department of Health, Education,
   and Welfare
   Washington, D. C.
   (Deafness)

2. Dr. Morton W. Bachrach
   Copyright Administrator
   National Institute of Education
   Washington, D. C.
   (Copyright/Marketing)

3. Dr. John W. Black
   Regents Professor and Director
   Speech and Hearing Science
   Ohio State University
   (Speech and Language Development)

4. Dr. Peter M. Blackwell
   Superintendent
   Rhode Island School for the Deaf
   Providence, Rhode Island
   (Linguistics/Deafness)

5. Mr. Elwood L. Bland
   Chief, Learning Resources Branch
   Division of Media Services
   Bureau of Education for the
   Handicapped
   U. S. Office of Education
   Washington, D. C.
   (Administration/Deafness)

6. Mrs. Isabel Steele Blish
   Supervising Teacher
   Clarke School for the Deaf
   Northhampton, Massachusetts
   (Language Development)

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* The word(s) in parenthesis below each name provides the reader with an indication of the individual's general area of consultation to Project LIFE.

7. Mr. William Brandon
President
Effective Learning, Inc.
Mount Vernon, N. Y.
(Instructional Design)

8. Dr. John W. Brannon
Associate Professor
Speech Pathology and Audiology
University of Kentucky
(Research/Language Development)

9. Mr. Joseph L. C'de Baca
Consultant
Behavioral Modification
San Rafael, California
(Media Implementation)

10. Mr. Joel Camphausen
Consultant
Media Development
Philadelphia
(Photography/Production)

11. Mr. Edward C. Carney
Executive Director
Council of Organizations
Serving the Deaf
Washington, D. C.
(Deafness)

12. Dr. R. Orin Cornett
Professor
Gallaudet College
Washington, D. C.
(Communication Theory)

13. Dr. Elaine Costello
Director, Curriculum Development
and Research
Continuing Education
Gallaudet College
Washington, D. C.
(Media Design/Evaluation)

14. Dr. Gilbert L. Delgado
Dean, Graduate School
Gallaudet College
(Administration/Deafness)

15. Dr. Robert J. DePietro, Professor
Department of Linguistics
Georgetown University
(Linguistics)

16. Miss Mary Jane DeWeerd
Program Officer
Early Childhood Education
Division of Educational Services
Bureau of Education for the
Handicapped
U.S. Office of Education
(Instructional Design/Deafness)

17. Dr. Jack C. Dinger, Chairman
Department of Special Education
Slippery Rock, Pennsylvania
(Special Education)

18. Sister Cecilia Diny, Teacher
Hosford School for the Deaf
Portland, Oregon
(Product Utilization/Evaluation)

19. Mr. Harold Domich
Associate Professor of History
Gallaudet College
Washington, D. C.
(Product Evaluation)

20. Mr. C. J. Donnelly
Dorsett Educational Systems, Inc.
Albuquerque, New Mexico
(Marketing/Media Design)

21. Mr. John J. Dostal
Marketing Consultant
Garden City, New York
(Educational Marketing)

22. Mr. John Dyas, Director
Special Education Projects
Guidance Associates, Inc.
Pleasantville, N. Y.
(Media Design)

23. Dr. G. C. Eichholz, Director
Division of Educational Resources
University of South Florida
(Media Design)

24. Dr. Donald Erickson
Council for Exceptional Children
Reston, Virginia
(Special Education)

25. Dr. George W. Fellendorf
Executive Director
A. G. Bell Association
for the Deaf
Washington, D. C.
(Deafness)

26. Mrs. Rosalie Fleisher
Children's Literature
Rockville, Maryland
(Design of Printed Media)

27. Mrs. Joan Forsdale
Motion Picture Specialist
Brooklyn, New York
(Design of Motion Media)

28. Dr. Judith Frankmann
Research Associate
Department of Audiology
and Speech Science
Michigan State University
E. Lancing, Michigan
(Language Development/Research)

29. Mrs. Jamesine Friend, Director
Computer Assisted Instruction
for the Deaf
Stanford University
Palo Alto, California
(Programmed Instruction)

30. Mr. Stan Fulwiler, President
Voxcom, Inc.
Rochester, N. Y.
(Marketing/Media Design)

31. Dr. Hans G. Furth, Professor
Department of Psychology
Catholic University
(Linguistics/Deafness)

32. Mr. Mervin D. Garretson, Principal
Division of Instruction
Model Secondary School for the Deaf
Washington, D. C.
(Deafness)

33. Dr. Robert R. Gates
Superintendent
Michigan State School for the Deaf
Flint
(Deafness/Communication Theory)

34. Mr. William C. Geer
Executive Secretary
Council for Exceptional Children
Arlington, Virginia
(Special Education/Administration)

35. Dr. Jonnie Geis
Assistant Professor of Linguistics
University of Illinois
Urbana
(Linguistics)

36. Dr. John A. Gough, President
Edutec, Inc.
Nottingham, Pennsylvania
(Deafness/Administration/Marketing)

37. Dr. Bernard L. Greenberg
Associate Professor of English
Gallaudet College
(Language Development)

38. Dr. Vernon R. Grose, Vice President
Tustin Institute of Technology
Santa Barbara, California
(Instructional Systems Design)

39. Miss Elizabeth Guilfoile
Writer of Children's Stories
Fort Thomas, Kentucky
(Design of Printed Media)

40. Dr. John W. Hagen
Associate Professor
Department of Psychology
University of Michigan
(Cognitive Development)

41. Miss Clara A. Hamel, Consultant
Linguistics
Providence, Rhode Island
(Linguistics/Language Development)

42. Mr. Robert L. Hancock, Consultant
Educational Design
Arlington, Virginia
(Special Education/Systems Design)

43. Mr. Rance Henderson, Superintendent
North Carolina School for the Deaf
Morgantown
(Deafness)

44. Mr. Paul T. Henry
Production and Photographic
Specialist
Instructo Corporation
Paoli, Pennsylvania
(Media Production)

45. Dr. Marshall S. Hester
Media Consultant
Las Cruces, New Mexico
(Deafness/Media Design)

46. Dr. Doin E. Hicks, Dean
Pre-College Programs
Model Secondary School for the Deaf
Washington, D. C.
(Deafness/Curriculum Design)

47. Mr. Gary L. Holman, Principal
Western Pennsylvania School
for the Deaf
Pittsburgh
(Deafness/Product Evaluation)

48. Mrs. Sandra Horowitz
Special Education
Montgomery County Public Schools
Maryland
(Evaluation/Product Design)

49. Dr. William D. Jackson, Director
Instructional Development
Learning Resources Center
Middle Tennessee State University
Murfreesboro
(Media Evaluation/Design)

50. Dr. Leonard I. Jacobson
Associate Professor
Department of Experimental
Psychology
University of Miami
(Research/Language Development)

51. Dr. W. Lloyd Johns, Professor
Educational Administration
San Fernando Valley State College
Northridge, California
(Administration/Media Design)

52. Dr. Charles Johnson
Chief, Audiological Services
Veterans Administration Center
Dayton, Ohio
(Research/Aphasia)

53. Mrs. Jane C. Johnson
Speech Pathologist
Private Practice
Lynchburg, Virginia
(Product Evaluation)

54. Miss Margaret S. Kent, Principal
Maryland School for the Deaf
Frederick
(Media Utilization)

55. Dr. Robert Kiekel
Department of Linguistics
Oregon State University
(Linguistics)

56. Miss Jacqueline Kimel
Designer of Workbooks
Chicago
(Design of Printed Media)

57. Dr. Richard F. Krug, Professor
Department of Speech Pathology
and Audiology
University of Colorado
(Deafness/Instructional Design)

58. Mrs. Mary LaRue
Instructor of English
Gallaudet College
(Language Development/Evaluation)

59. Dr. Robert R. Lauritsen
Coordinator
St. Paul Technical Vocational
Institute
St. Paul, Minnesota
(Media Adaptation)

60. Mr. Robert Lennan
Assistant Superintendent
California School for the Deaf
Riverside
(Evaluation/Multihandicapped)

61. Dr. Henry T. Lippert
School of Education
University of Illinois
(Programmed Instruction)

62. Mr. Ralph Lopatin, President
Lopatin Productions, Inc.
Philadelphia
(Photography)

63. Dr. Edgar I. Lowell
Administrator
John Tracy Clinic
Los Angeles
(Deafness/Early Childhood
Education)

64. Mrs. Dorothy McCarr, Consultant
Education of the Deaf
Beaverton, Oregon
(Deafness/Media Design)

65. Mr. James E. McCarr
Assistant Professor
Education of the Deaf
Lewis and Clark College
Portland, Oregon
(Linguistics)

66. Mrs. Virginia McKinney, Director
Communication Skills Center
Los Angeles
(Deafness/Adult Education)

67. Dr. William J.A. Marshall
Coordinator, Programs for the Hearing Impaired
Chicago Public Schools
Whitney Young High School
Chicago, Illinois
(Deafness/Research/Evaluation)

68. Mr. Eugene Martinez, President
Hudson Photographic Industries, Inc.
Irvington-On-Hudson, N. Y.
(Hardware Design)

69. Dr. Charles Mead, Research Associate
Computer Based Project for the Handicapped
Syracuse Public Schools
Syracuse, New York
(Media Evaluation/Design)

70. Dr. Mary N. Meeker, Professor
Director of Training
School Psychology
Loyola University
Los Angeles
(Cognitive Development)

71. Dr. Carl E. Miller
Professor of Education
California State College
Bakersfield
(Reading)

72. Dr. June Miller
Director of Education
Department of Speech and Hearing
University of Kansas
(Deafness/Media Evaluation)

73. Dr. Sue Mitchell
Assistant Professor
Department of Special Education
Western Maryland College
(Special Education)

74. Mr. Boris Mlawer, Vice President for Manufacturing
Simon and Schuster, Inc.
New York, New York
(Printing/Produc[illegible])

75. Dr. Donald F. Moores
Associate Professor of Special Education
University of Minnesota
(Linguistics/Deafness)

76. Dr. Ann M. Mulholland
Professor, Teacher's College
Columbia University
(Deafness/Language Development)

77. Mr. Herbert Nash, Director
Special Education
State Department of Education
Atlanta, Georgia
(Special Education/Evaluation)

78. Dr. Malcolm Norwood, Chief
Captioned Films and Telecommunications Branch
Division of Media Services
Bureau of Education for the Handicapped
U.S. Office of Education
Washington, D. C.
(Deafness/Administration)

79. Dr. Gabriel D. Ofiesh
Director for the Center of Educational Technology
American University
(Educational Technology/Programmed Instruction)

80. Dr. Jack Olson, Chairman
Department of Speech
Montana State University
(Media Evaluation/Deafness)

81. Dr. Herbert J. Oyer, Dean
College of Communication Arts
Michigan State University
East Lansing
(Research/Deafness/Administration)

82. Mr. William Peck
Superintendent
Oregon State School for the Deaf
Salem
(Deafness/Language Development)

83. Dr. Donald G. Perrin
Associate Professor of Education
Educational Technology
University of Maryland
(Research/Media Design)

84. Dr. Leo E. Persselin
Consultant in Instructional
Systems for the Handicapped
Los Angeles
(Systems Design)

85. Sister Margaret Peter, O.S.F.
Teacher/Media Developer
St. John's School for the Deaf
Milwaukee, Wisconsin
(Media Evaluation/Deafness)

86. Dr. Richard M. Phillips
Dean, Student Affairs
Gallaudet College
(Deafness)

87. Dr. Sydney L. Pressey
Professor Emeritus
Department of Psychology
Ohio State University
(Programmed Instruction)

88. Miss Marian Quick
Associate Professor
Department of Special Education
University of Pennsylvania
(Language Development/Deafness)

89. Dr. Howard M. Quigley
Executive Director
Conference of Executives of
American Schools for the Deaf
Washington, D. C.
(Deafness/Marketing/Administration)

90. Dr. Stephen P. Quigley, Director
Institute for Research on
Exceptional Children
University of Illinois
Urbana
(Linguistics/Research/Deafness)

91. Dr. Henry W. Ray
Director, Teaching/Learning
Resources
Warminster, Pennsylvania
(Media Implementation)

92. Dr. Joseph Rosenstein, Director
Research, Curriculum Development
and Evaluation
Model Secondary School for the Deaf
Washington, D. C.
(Cognitive Development/Deafness)

93. Mrs. Mary Lou Rush
Supervising Writer
World Traveler Magazine
A. G. Bell Association for the Deaf
Washington, D. C.
(Programmed Instruction/Deafness)

94. Mrs. Marsha Ryan, Vice President
The Communicators, Inc.
Pomfret Center, Connecticut
(Media Cost Analysis)

95. Dr. David A. Sabatino
Associate Professor
Learning Disabilities
Department of Special Education
Northern Illinois University
Dekalb
(Special Education)

96. Dr. Patricia A. Scherer
Professor of Special Education
Northwestern University
Evanston, Illinois
(Design of Print Media)

97. Dr. Philip J. Schmitt
Chairperson
Associate Professor of Education
Gallaudet College
(Deafness/Language Development)

98. Dr. Ben M. Schowe, Jr.
Instructor, English
Model Secondary School for the Deaf
Washington, D. C.
(Deafness/Product Evaluation)

99. Mr. Frederick C. Schreiber
Executive Secretary
National Association for the Deaf
Silver Spring, Maryland
(Deafness)

100. Mrs. Jean Schuler, Director
Speech and Language Rehabilitation Center
Department of Speech Pathology
Ohio State University Hospital
(Aphasia)

101. Mr. Al Simmons, Director
Media Department
Arkansas School for the Deaf
Little Rock, Arkansas
(Art Design/Art Technique)

102. Miss Joan Smith
Resource Teacher
A. G. Bell Elementary School
Department of the Deaf
Chicago
(Media Evaluation/Deafness)

103. Mr. Norval Smith
Vice President and
Production Coordinator
The Communicators, Inc.
Pomfret Center, Connecticut
(Photography)

104. Dr. David A. Spidal, Principal
New York School for the Deaf
White Plains, New York
(Research/Media Design)

105. Dr. Robert E. Stepp, Director
Specialized Office for the
Deaf and Hard of Hearing
University of Nebraska
Lincoln
(Deafness/Media Design)

106. Miss Alice H. Streng, Professor
Education of the Deaf
University of Wisconsin
Milwaukee
(Language Development/Deafness)

107. Dr. Courtney M. Stromsta
Professor
Speech Pathology and Audiology
Western Michigan University
Kalamazoo
(Research)

108. Dr. E. Ross Stuckless
Director of Research
National Technical Institute
for the Deaf
Rochester Institute of Technology
(Research/Programmed Instruction)

109. Mr. Hubert D. Summers, Director
NCEMMH/MSSD Liaison Office
Model Secondary School for the Deaf
Washington, D. C.
(Systems Design/Deafness)

110. Mr. Donald R. Taylor
Staff Associate
The Production Group, Inc.
Washington, D. C.
(Media Design)

111. Dr. Savasailam Thiagarajan
Department of Instructional
Technology
University of Indiana
(Programmed Instruction)

112. Dr. Helen Thompson
Professor Emeritus
Teacher's College
Columbia University
(Media Design/Deafness)

113. Dr. Gweneth R. Vaughn, Director
Audiology/Speech Pathology
Veterans Administration Hospital
Birmingham, Alabama
(Aphasia/Research)

114. Dr. McCay Vernon
Department of Psychology
Western Maryland College
Westminster
(Research/Deafness)

115. Dr. Harry Wachs
Optometrist/Specialist in
Visual Perception
Pittsburgh
(Visual Perception)

116. Mr. C. W. Warfield, Manager
Service Department
The Film Center
Washington, D. C.
(Hardware Redesign)

117. Dr. James Wigtil, Chairman
Department of Counseling
and Guidance
Ohio State University
Columbus
(Media Design)

118. Dr. Boyce R. Williams, Director
Office of Deafness and
Communicative Disorders
Rehabilitation Services
Administration
Department of Health, Education,
and Welfare
Washington, D. C.
(Deafness)

119. Dr. Frank E. Williams, Consultant
Cognition and Reading
Salem, Oregon
(Reading/Cognitive Development)

120. Mrs. Hilda C. Williams, Consultant
Language and Reading
Washington, D. C.
(Language/Reading Development)

121. Mr. G. I. Wilson
Assistant Superintendent
Oregon State School for the Deaf
Salem, Oregon
(Media Design/Deafness)

122. Dr. Frank B. Withrow
Special Assistant for Special
Projects to the Deputy
Commissioner
Bureau of Education for the
Handicapped
U. S. Office of Education
Washington, D. C.
(Media Design)

123. Dr. Enid Wolfe, Director
Developmental Center for
Special Education
Washington, D. C.
(Special Education)

124. Dr. Raymond Wyman, Professor
School of Education
University of Massachusetts
Amherst
(Media Design/Evaluation)

Appendix C

Listing of Project LIFE-Related Publications

PUBLICATIONS*

1. **Alford, G.,and Ainsworth, L.** "Responsive Environmental Program for Spanish American Children Employing the Project LIFE Visual Perception Program." A Research Report, Clovis Public School System, Clovis, New Mexico, 1971.

2. **Bannatyne, A.** "Programs, Materials and Techniques--Project LIFE: Language Improvement to Facilitate Education." *Journal of Learning Disabilities*, 6, 7, August/September, 1973, 6-9.

3. **Barringer, D.**,"A Home Program Using Self-Instructional Materials With Hearing Impaired Children." Masters Thesis, Utah State University, Logan, 1971.

4. **Black, J., Hooker, E., Long, J.,** and **Wilkens, K.** "The Teaching of Constructed Responses in Language Therapy." An Ohio State University Research Foundation Report, July, 1970.

5. **Blish, I.** "A Historical Overview on Language Teaching." *Exceptional Children*, 30, 8, April, 1964, 345-348.

6. **Edberg, B.** "Visual Perceptual Skills and Young Deaf Children Using Project LIFE." Research Report, Special Education and Rehabilitation, School of Education, University of Pittsburgh, June, 1971 (30 pages).

7. **Garner, W.** "The LIFE Programming Process." An Instructional Design Report, Project LIFE, National Education Association, May, 1972 (17 pages).

8. **Garner, W.,** and **Zerrip, C.** "Evaluating Programmed Learning Materials." *American Annals of the Deaf*, Vol. 116, No. 5, October, 1971, 456-464 (Paper Delivered at the Symposium on Research and Utilization of Educational Media for Teaching the Deaf, Midwest Regional Media Center for the Deaf, University of Nebraska, Lincoln, March 22-24, 1971).

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*Compilation of Project LIFE-related publications, research reports, and significant unpublished manuscripts.

9. **Golden, E.** "Retention of Memory of Deaf Students in Comparison with Normally Hearing Students of Similar Ages." Doctoral Dissertation, Walden University, July, 1974.

10. **Gonzales, R.** "The Introduction of Reading to Preschool Hearing Impaired Subjects." Doctoral Dissertation, Department of Special Education, University of Tennessee, 1971.

11. **Gough, J.** "The Educational Media Complex: Report from Captioned Films for the Deaf." *American Annals of the Deaf*, Vol.112, No. 5, October, 1967.

12. **Granger, B.** "Exploratory Use of Project LIFE System With a Quadraplegic Subject." A Research Report, Winnipeg General Hospital, Manitoba, Canada, 1972.

13. **Guajardo, J.** "Project LIFE in Migrant Education Programs." Research Report, San Antonio Public School System, Region 20, San Antonio, Texas, 1971.

14. **Holman, G.** "The Utilization of Project LIFE Materials With American Indian Children." Department of Special Education, Idaho State University (testing at Fort Hall Indian Reservation), A Research Study, 1971.

15. **Johnson, J.** "The Use of LIFE Materials with Learning Disabled Children in a Clinical Setting." Research Report, Private Practice, Lynchburg, Virginia, 1971.

16. **Kessler, A.** "Programmed Instruction: Its History, Theory, and Applicability to the Education of the Deaf Through Project LIFE--Language Improvement to Facilitate Education of Hearing Impaired Children." Masters Thesis, Elmira College, Elmira, New York, June, 1971 (34 pages).

17. **Lamb, A., Hurry, S., Fewell, W.** and **Hartley, G.** *Experimental Classes for Multiply Handicapped Deaf Children.* Report of a Title I Summer Program, 1971 (64 pages).

18. **Lane, L.** "The Language of LIFE." An Instructional Design Report, Project LIFE, National Education Association, May, 1972 (38 pages).

19. **Lechner, B.** "The Effects of Having Children with A Developmental Linguistic Dysfunction Repeat Therapeutic Self-AdministeredTasks." Masters Thesis, Ohio State University, Columbus, 1971.

20. **Lennan, R.** "A Comparison of Four Strategies to Teach Receptive Visual Language to Young Deaf Learners." Doctoral Dissertation, University of Southern California, January, 1974 (151 pages).

21. **Lent, J.,** and **McLean, B.** (Editors). *Design and Development of Instructional Products for the Handicapped: An Emerging Technology.* Project MORE, University of Kansas, January, 1975 (217 pages).

22. **Loehnert, D.** "The Performance of Aphasic Individuals with a Developmental Linguistic Dysfunction on Repeated Self-Administered Therapeutic Tasks." Masters Thesis, Ohio State University, Columbus, 1971.

23. **Lowell, E.** "Is There a Middle Ground?" *American Annals of the Deaf,* Vol. 116, No. 5, October, 1971, 473-475.

24. **McCarr, J.** "Programmed Instruction in a School Curriculum." *American Annals of the Deaf,* Vol. 116, No. 5, October, 1971, 476-479.

25. **McCarr, J.,** and **McCarr, D.** "Programmed Instruction, Reading and the Affective Domain." *National Society for Programmed Instruction* (NSPI), Improving Human Performance: A Research Quarterly, Special Issue on Programmed Instruction for the Deaf, Vol. I, No. 3, September, 1972, 60-62.

26. **Marshall, W.** *Operation Pulse: Research Field Manual.* A Guide to the Utilization and Reporting of Project LIFE Programs, National Education Association, 1972 (190 pages).

27. **Mead, C.** "The Effects of Project LIFE on Children With Language Learning Disabilities." Doctoral Dissertation, School of Education, Syracuse University, 1974.

28. **Miller, J.** "Practices in Language Instruction." *Exceptional Children,* 30, 8, April, 1964, 355-358.

29. **Mitchell, H.** "Project LIFE Language Training Program for Selected Children in the Model Cities Program." A Research Report of the Model Cities Program, State Department of Health, Columbus, Ohio, 1973.

30. **Mulholland, A.** "The Impact of Individual Differences on Language Learning." *Exceptional Children*, 30, 8, April, 1964, 359-364.

31. **Murphy, H.** "The Effects of Types of Reinforcement, Color Prompting, and Image Size Upon Programmed Instruction With Deaf Learners." Doctoral Dissertation, University of Southern California, 1970.

32. **Murphy, H.** "Activities in Programmed Instruction at the Southwest School for the Deaf." *American Annals of the Deaf*, Vol. 116, No. 5, October, 1971, 480-483.

33. **Olson, J., Pfau, G.,** and **Weeks, L.** "The Implications of Programmed Instruction on the Motivation for Learning in Hearing Impaired Children." *Audecibel*, Fall, 1967. 189-197.

34. **Owen, T.** "Project LIFE: System Evaluation Study." Special Research Report, Computer Based Project for the Evaluation and Development of Media for the Handicapped. Syracuse Public School System, Syracuse, New York, April, 1971.

35. **Oyer, H.,** and **Frankmann, J.** *Language Learning of Children as a Function of Sensory Mode of Presentation and Reinforcement Procedure.* Final Report, Bureau of Education for the Handicapped, USOE Grant No. OEG-0-73-0423, College of Communication Arts, Department of Audiology and Speech Sciences, Michigan State University, East Lansing, December, 1973 (111 pages).

36. **Pfau, G.** "The Influence of Modality of Presentation, Response Confirmation Modes, and Types of Immediate Reinforcement upon Programmed Learning by Hearing Impaired Children." Doctoral Dissertation, The Ohio State University, 1967 (208 pages).

37. **Pfau, G.** *Handbook for Teachers.* An Operations Manual for Project LIFE Field Test Centers, September, 1968.

38. **Pfau, G.** "Project LIFE--Language Improvement to Facilitate Education of Hearing Impaired Children." *Hearing and Speech News,* November-December, 1968, 8ff.

39. **Pfau, G.** "Project LIFE PI Analysis." *American Annals of the Deaf,* November, 1969, 829-837.

40. **Pfau, G.** "Programmed Instruction: An Exploration into its Effectiveness with the Handicapped Child." *Audiovisual Instruction,* 14, 9, November, 1969, 24-27.

41. **Pfau, G.** "Project LIFE: Developing High Interest Programmed Materials for Handicapped Children." *Educational Technology,* 10, August, 1970, 13-18.

42. **Pfau, G.** "The Application of Programmed Instruction Principles to Classroom Instruction." *Volta Review,* 72, September, 1970, 340-348.

43. **Pfau, G.** "Educating the Deaf Child." *Audiovisual Instruction,* September, 1970, 24-29.

44. **Pfau, G.** "Reinforcement and Learning--Some Considerations with Programmed Instruction and the Deaf Child." *Volta Review,* 72, October, 1970, 408-412.

45. **Pfau, G.** "Programmed Movies--A Supplemental Medium for Language Development." *American Annals of the Deaf,* Vol. 115, No. 6, October, 1970, 569-572 (Paper Delivered at the Symposium on Research and Utilization of Educational Media for Teaching the Deaf, Midwest Regional Media Center for the Deaf, University of Nebraska, Lincoln, March 16-18, 1970).

46. **Pfau, G.** "Built-In Motivation." *Hearing and Speech News,* 40, March-April, 1972, 16ff.

47. **Pfau, G.** "Project LIFE: Programming Rationale and Process." *National Society for Programmed Instruction* (NSPI), Improving Human Performance: A Research Quarterly, Special Issue on Programmed Instruction for the Deaf, Vol. I, No. 3, September, 1972, 8-17.

48. **Pfau, G.** "Request for Proposals (To Furnish a Software and Hardware Distribution Plan for the Exclusive Right to Market and Disseminate the Project LIFE System)." National Foundation for the Improvement of Education, October, 1972 (74 pages).

49. **Pfau, G.** "Project LIFE--Language Improvement to Facilitate Education: A Multimedia Instructional System for the Deaf Child." *The Fourth International Conference on Deafness: Abstracts*, Tel Aviv, Israel, March, 1973.

50. **Pfau, G.** "Project LIFE--An Instructional Program for the Deaf Student." Paper presented at the 46th Meeting of the Convention of American Instructors of the Deaf, Indianapolis, June, 1973, *CAID Proceedings*, October, 1973.

51. **Pfau, G.** *Instruction Manual.* General Electric/Project LIFE Program, January, 1974 (192 pages).

52. **Pfau, G.** "Project LIFE a Decade Later: Some Reflections and Projections." *American Annals of the Deaf*, 119, 5, October, 1974, 549-553.

53. **Pfau, G.** "Kids and Teachers Love LIFE." *Hearing and Speech News*, 43, 2, March/April, 1975, 20-23.

54. **Pfau, G.** "Backtalk: Project LIFE." *Hearing and Speech News*, 43, 4, July/August, 1975, p. 4.

55. **Pfau, G.,** and **Olson, J.** "The Influence of Print Size on the Rate of Learning Single Words by Hearing Impaired Children." The Ohio State University, 1967 (22 pages).

56. **Pfau, G.,** and **Spidal, D.** "Project LIFE: A Potential Extension of the Formal Learning Environment." Paper Delivered at the 47th Meeting of the Convention of American Instructors of the Deaf, Greensboro, North Carolina, June 22-28, 1975 (10 pages).

57. **Pfau, G.,** and **Spidal, D.** *Handbook for Teachers.* General Electric/Project LIFE Program, September, 1971.

58. **Rosenstein, J.** "Concept Development and Language Instruction." *Exceptional Children*, 30, 8, April, 1964, 337-343.

59. **Schuler, J.**, and **Sherard, E.** "Diagnostic and Prescriptive Procedures for Treating Acquired Dyslexia." Research Report, Disability Evaluation Services, Ohio State University, Columbus, and Children's Hospital, Columbus, Ohio, 1972.

60. **Spidal, D.**, and **Sheridan, V.** "The Child in the Process: Affecting His Potential Through LIFE." *American Annals of the Deaf*, Vol. 117, No. 5, October, 1972, 519-530 (Paper Delivered at the Symposium on Research and Utilization of Educational Media for Teaching the Deaf, Midwest Regional Media Center for the Deaf, University of Nebraska, Lincoln, March 22-24, 1971).

61. **Spidal, D.** "Applications of LIFE to Early Childhood Education." Paper Delivered at the Conference of Early Childhood Education, Southern Regional Media Center for the Deaf, University of Tennessee, Knoxville, July 19-23, 1971 (7 pages).

62. **Spidal, D.** "Project LIFE Visual Perceptual Training." Research Report, National Education Association, August, 1971 (41 pages).

63. **Spidal, D.** "Project LIFE: A New Outlook for the Deaf." Paper Delivered at the 3rd Conference of Canadian Educators of the Deaf and Blind, Montreal, October 1, 1971 (17 pages).

64. **Spidal, D.** "A Cooperative Parent-Teacher Model Using the Project LIFE Program in a Home Environment with a Learning Disabled Child." Research Report, Project LIFE Research Department, Summer, 1972.

65. **Spidal, D.**, and **Pfau, G.** "The Potential for Language Acquisition of Illiterate Deaf Adolescents and Adults." *Journal of Rehabilitation for the Deaf*, July, 1972, 27-41.

66. **Spidal, D.**, and **Pfau, G.** "The Illiterate Deaf Adult--An Investigation in Communication Skills." *Journal of Rehabilitation of the Deaf*, October, 1972, 47-55.

67. **Streng, A.** "The Applicability of Individualized Programed Instruction in the Education of Deaf Children." *Exceptional Children*, 30, 8, April, 1964, 365-371.

68. **Thiagarajan, S.** "A Programmer Looks at the Education of the Hearing Impaired." *National Society of Programmed Instruction* (NSPI), Improving Human Performance: A Research Quarterly, Special Issue on Programmed Instruction for the Deaf, Vol. I, No. 3, September, 1972, 18-21.

69. **Thompson, H.** "An Early Attempt in Profusely Illustrated Language Instruction." *Exceptional Children, 30, 8, April, 1964, 349-353.*

70. **Tucker, M.** "Program Development and Application in the Classroom for Deaf Children." Masters Thesis, Wisconsin State University, Oshkosh, 1972 (110 pages).

71. **Vockell, K.** "Language for Deaf Students with Other Learning Impairments: Evaluation of Project LIFE." Masters Thesis, Purdue University, Lafayette, 1972 (29 pages).

72. **Walton, J.** "Aphasic Adults' Responses to Tasks that Require Identifying and Constructing Sentences." Masters Thesis, Ohio State University, Columbus, 1970 (51 pages).

73. **White, A.** and **Schmidt, J.** "A Comparitive Study of Two Reading Programs Administered to 5 and 6 Year Old Children." A Special Report of the Metropolitan Summer School Program, Salt Lake City, Utah, 1970.

74. **Williams, D.** "A Pilotal Investigation of the LIFE Materials with Autistic Children." Research Report, School for Contemporary Education, McLean, Virginia, 1971.

75. **Wolfe, E.** "The Use of the Project LIFE Program in a Complete School Program with Rubella Children." Research Report, Developmental Center for Special Education, Public Schools of the District of Columbia, 1971.

76. **Wooden, H.** "Dramatizing Language for the Deaf." *Exceptional Children,* 29, December, 1962, 155-163.

77. **Wooden, H.** "A Prospectus of a Planning Project to Develop Better Methods and Facilities for Teaching Language to Deaf Children." National Education Association, Washington, D.C., 1963 (28 pages).

78. **Wooden, H.** "Language Instruction for Deaf Children: An Introduction to Selected Papers. *Exceptional Children*, 30, 8, April, 1964, 333-335.

79. **Wooden, H.** "An Audiovisual Approach to Language Instruction of Children with Severe Hearing Impairments." *Audiovisual Instruction*, 11, 9, November, 1966, 710ff.

80. **Wooden, H.** and **Willard, L.** "Project LIFE, Language Improvement to Facilitate Education of Hearing Impaired Children." *American Annals of the Deaf*, 110, November, 1965, 541-552.

81. **Zerrip, C.** "Thinking Activities." An Instructional Design Report, Project LIFE, National Education Association, May, 1972 (10 pages).

Appendix D

Partial Listing of Research and Evaluation Studies

Research and Evaluation Studies

Spidal, David A.

"The Correlation Between Reading Level and Unit Attainment of Project LIFE Materials by Hearing Impaired Students"

Institutional Study, 1974
National Foundation for the Improvement of Education, Washington, D.C.

Summary: The Project LIFE staff obtained demographic and achievement data from one school. Reading scores were compared with level of attainment within the Project LIFE System as indicated by the unit/set level used by the student. Thirty-four students were considered. The Spearman Rank-Order Correlation (Rho) was found to be +.9466.

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Gonzales, Robert

"The Introduction of Reading to Preschool Hearing Impaired Students"

Doctoral Dissertation, 1971
University of Tennessee, Knoxville Hearing Impaired (C.A. 4-5)

Summary: A group of six preschoolers in a residential school for the deaf, ages four to five, were given the Project LIFE Perceptual Training Series and Language/Reading Sets 1-8. The means of response was via a multi-visual approach with overhead projectors in which each student in the group had his own projector and responded by making an appropriate mark on the viewing surface of the overhead projector. Behavioral modification techniques were also employed in the study in a time-interrupted series. The results showed that the preschool children could learn to read using the Project LIFE materials in a group situation of this type. Changes were also evident as the reinforcement scheduling was varied within the experiment.

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Alford, Gay and Ainsworth, L.

"Cooperative Research--Responsive Environmental Program for Spanish American Children"

Institutional Study, 1971
Clovis, New Mexico

High Risk Spanish American
Bilingual (C.A. 3-5)

Summary: Thirty-four students were matched in a control and experimental grouping situation for instruction on the LIFE materials as part of the normal everyday school program. All students were high risk Spanish American children whose birth weight was below five pounds, who came from Spanish speaking backgrounds, and exhibited other traits which classified the students as high risks. The children during the study were from three to five years in age. During the first year of the investigation the experimental group received the Project LIFE Perceptual Training filmstrips in a constant rotation. After the first year, observable differences in student performance were noted based on use of the Spanish-English version of the Peabody Picture Vocabulary Test and the Frostig and Purdue Perceptual Motor Survey. The site visitation team of the funding agency, noted the achievement difference in favor of the Project LIFE treatment group and insisted that all students receive the training with the LIFE materials in subsequent years. Consequently, no long-term data on the effect of the materials on these students is available.

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Spidal, David A.

"Research Report: Validation and Reliability in the Project LIFE Program"; Appendix A "Error Data for Perceptual Training"

Institutional Study, 1974
National Foundation for the Improvement of Education, Washington, D.C.

Hearing Impaired (C.A. 6)
Hearing Impaired (C.A. 7-8)
Hearing & Hearing Impaired (C.A. 3-5)

Summary: Field evaluation data on both hearing and hearing impaired students, aged 3-5, using Project LIFE Perceptual Training materials were cumulated and analyzed. Statistical analysis indicated that there was no

difference in the performance of the groups in terms of mean errors per filmstrip (30 filmstrips). The pre and post test covered the instruction in the total set of thirty filmstrips. Pretest performance parameters were Mean errors=30.50, standard deviation=37.52. Post test parameters were Mean errors=6.20 with a standard deviation of 8.30. Student data was included only if the individual used the materials one or more times per week. Hearing impaired students had no secondary handicaps recorded.

Data for six-year-old hearing impaired students was similarly studied.

Mean errors	pre 11.73	post 2.31
Standard deviation	pre 14.13	post 3.21

Data for seven and eight year old hearing impaired students were also studied through a similar procedure.

Mean errors	pre 8.16	post 1.82
Standard deviation	pre 9.58	post 3.61

Data for six year old hearing impaired students were similarly studied.

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White, Alfred H. and Schmidt, John

"A Comparative Study of Two Reading Programs Administered to Five and Six Year Old Deaf Children"

Independent Study, Undated
No institutional reference Deaf (C.A. 5-6)

Summary: The study compared the "rate of assimilation" of Project LIFE and Sullivan reading materials. Students in a summer program were randomly assigned to Treatment I (Project LIFE) and Treatment II (Sullivan materials). Upon completion of the instructional period (three weeks), phrases and/or sentences were constructed using the vocabulary taught in the respective programs. The maximum number was 25, the maximum from Project LIFE materials was 24. A multiple choice match-to-picture testing approach was used. The proportion of correct matches of picture to sentence/phrase was the dependent variable. The students who used Project LIFE materials demonstrated a significantly higher proportion of correct responses in matching sentence/phrase material to pictures.

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Golden, Emanuel

"Retention of Memory of Deaf Students in Comparison with Normally Hearing Students of Similar Ages"

Doctoral Dissertation, 1974
Walden University
Miami, Florida

Severely Hearing Impaired (C.A. 8-11)
Normal Hearing (C.A. 8-13)

Summary: Six filmstrips from the Project LIFE Perceptual Thinking Series were used. All related to memory tasks. Hypotheses related to differences between hearing and deaf students' performance on memory tasks. Tasks involved memory for color, objects, figures, and position. Deaf students' performance (error rate or time to completion) was as good or better than the hearing students' performance on every filmstrip. On one of the four filmstrips on which deaf students performed better, the variable was error score and on three, it was time to completion.

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Walton, Jacqueline

"Aphasic Adults' Responses to Tasks that Require Identifying and Constructing Sentences"

Masters Thesis, 1970
Ohio State University, Columbus, Ohio

Aphasic Adults (C.A. 27-74)

Summary: One hypothesis related to decrease in errors across repetitions of the same filmstrip. Another with the effects of a filmstrip with sentences and no pictures versus a filmstrip with both sentences and pictures on error rate. Ten aphasic adults were the experimental subjects. Error rate decreased across repetitions (8 trials) of both types of filmstrips. Error rate was statistically higher for the filmstrip with pictures. No explanation was offered for the picture-vs-non-picture filmstrip results. The language used in the two filmstrips is not identical and may be a major source of difference.

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Barringer, Donald

"A Home Program Using Self-Instructional Materials With Hearing Impaired Children"

Masters Thesis, 1971
Utah State University, Logan Severely Hearing Impaired (C.A. 6-15)

Summary: The study compared pre- post-test gains of three groups. Group one used Project LIFE materials at home with minimal parental supervision. Group two used Project LIFE materials at school. The third group was a control for learning effects of repeated testing and did not receive instruction using the Project LIFE materials. Both the home and school groups made significant gains on Project LIFE criterion tests. The average size of each group was 20 students. All were day students. The material varied from student-to-student as a result of "diagnostic placement." The study was in the context of an investigation to determine the potential for a parent association to coordinate an out-of-school program of supplementary instruction. A survey of parents was used to assess parental reaction. Both the gains of the home group and parental reaction suggested the viability of instruction via Project LIFE in the home without direct involvement by professionals.

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Spidal, David A., and Pfau, Glenn S.

"The Potential for Language Acquisition of Illiterate Deaf Adolescents and Adults"

Spidal, David A., and Pfau, Glenn S.

"The Potential for Language Acquisition of Illiterate Deaf Adolescents and Adults"

Institutional Study, 1972
Communication Skills Center, Los Angeles Adolescent and Adult Deaf

Summary: Fourteen illiterate adolescent and adult deaf individuals were given language therapy at the Communication Skills Center. Upon entry into the

program, the students were almost totally unable to communicate by any symbolic mode with therapists, the family, or with other students. At the end of the program, they could and did communicate with others at the simple sentence level in speech writing and in the language of signs. Most of them were reading pre-primer and primer books, and all had greatly increased their reading vocabulary. All students were self-paced and given individualized instruction with the Project LIFE language materials being the center and core of the therapy. The duration of the therapy for which this report covers was six months.

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Wohlever, Sandra and Van Keuren, Patrice

"A Short Study in the Area of Visual Perception"

Institutional Study, 1973
The Ohio State University
Columbus, Ohio

a) Dyslexic Children (C.A. 6-11)
b) Normal Children (C.A. 7-14)
c) Aphasic Adults (C.A. 65-70)
d) Normal Adults (C.A. 21)

Summary: The study compared error rate across four groups a)Dyslexic Children, b) Normal Children, c)Aphasic Adults, and d) Normal Adults on Project LIFE Perceptual Thinking materials. (This was not a study of effect of instruction.) A single Project LIFE criterion test was used.

The order of groups in terms of error rate (low to high) was d, a, b, c. Among the adult aphasic groups, individuals with brain damage in the dominant hemisphere, performed less well than those with damage in the non-dominant hemisphere. Performance of dyslexic students was superior to that of normal students, however, the normal students averaged approxi tely two years less in age. Performance was positively correlated with a e for normal students, but not for dyslexic students.

The number of subjects in each group was quite small (5). Inferential statistics were not used.

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Lechner, Barbar Knauss

"The Effects of Having Children with a Developmental Linguistic Dysfunction Repeat Self-Administered Therapeutic Tasks"

Masters Thesis, 1971
The Ohio State University

Developmental Dysfunction in Reading and Writing (C.A. 8-11)

Summary: The children involved were at least two years retarded in reading and writing with parents who had experienced reading problems. Project LIFE Language Reading Series filmstrips were used.

One hypothesis dealt with reduced error rate over trials: error rate decreased over eight trials. Another hypothesis dealt with the effects of repeated trials on a first filmstrip, upon error rate during the first trial on a second filmstrip. Comparison was made between error rates on initial trials on each filmstrip. Error rate was lower on the initial trial of the second filmstrip than on the initial trial of the first filmstrip. A-B; B-A orders of presentation were not used however; only an A-B order. Difference in difficulty between the filmstrips may well have accounted for the statistical effect.

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Oyer, Herbert J. and Frankman, Judith P.

"Language Learning of Children as a Function of Sensory Mode of Presentation and Reinforcement Procedure"

Institutional Study, 1973
Michigan State University, East Lansing

Hearing Impaired (C.A. 7-9 and 11-13)

Summary: The authors investigated: (1) the effects of introducing supplemental auditory cues simultaneous with existing visual cues, (2) the effects of taken reinforcement on rate and extent of learning, (3) the generalization of learning to novel receptive and written language tasks, and (4) retention of learning.

Audio tracks were developed to accompany Language Reading materials; receptive generalization tests were developed; expressive generalization tests were developed (modified cloze procedure); "silver" keys were used as tokens and were exchanged for prizes.

The token reinforcement procedure was found not to be effective in reducing error rate during training. Supplementary auditory input facilitated learning for students with good auditory discrimination (lower primary students). For upper primary students, the effect of auditory supplementation appeared to diminish as students advanced across later sets of training materials. Sensory input condition showed little or no effect on the mean proportion correct on receptive generalization tests or on expressive generalization tests. Films from the Language Reading Series appeared to be too difficult for most pre-reading students in the study.

Six months after completion of the main study, lower primary students were exposed to the following procedures: (1) review test for retention, (2) relearning of training films, and (3) the final review test. On the review tests, subjects scores actually improved. On the relearning activity, performance of the lower primary students was consistently higher than on the original learning but parallel (what had been more difficult strips remained so). Comparing the final tests with final review tests, differences were significant in favor of the scores on the final review test.

Evidence was interpreted to suggest that the language structures learned through the Project LIFE system were retained over a three to six month interval.

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Lennan, Robert K.

"A Comparison of Four Strategies to Teach Receptive Visual Language to Young Deaf Learners"

Doctoral Dissertation, 1974
University of Southern California
Los Angeles, California

Prelingual Deaf (C.A. 5.8-8.5)

Summary: The study compared programmed instruction alone (PI), programmed instruction as a review and reinforcement technique following teacher presentation (TI-PI), programmed instruction introduction and teaching followed by teacher review (PI-TR), and teacher instruction without programmed instruction (TI). Four classes of seven students each were used. Assignment to conditions was by class rather than individual. Two pretests were given, a post test, and a retention test 30 days after the post test. The

dependent variables were (1) correct responses, (2) the time for instruction, and (3) retention scores. The training materials consisted of the concepts in the six filmstrips of Unit I of the Programmed Language Reading Series. The study was conducted twice.

The group which had initial teaching by programmed instruction followed by teacher review made greater gains between the second pretest and the post test. There were not significant differences among the other three groups on correctness of responses on the post test. The TI-PI group took the longest amount of time to complete instruction in both studies.In the original study the TI group used the least amount of time. In the replication study the PI group used the least amount of time. There was no significant correlation between time for instruction and achievement.

In the comparison between performance on the post test and retention test, there was no significant differences, indicating a strong retention effect.

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Murphy, Harry J.

"The Effects of Types of Reinforcement, Color Prompting, and Image Size Upon Programmed Instruction with Deaf Learners."

Doctoral Dissertation, 1970
University of California, Los Angeles, Calif. Deaf Students
Grades 7-12

Summary: Eighty deaf students were used in a 4 x 2 x 2 factorial design corresponding to four levels of reinforcement presence or absence of color prompting, and two different image sizes. The materials were presented by slides in a Kodak Carousel projector controlled through the Project LIFE Program Master. Two measures were used; error rates and post test scores. The materials were specially constructed, not Project LIFE materials.

The no knowledge of results group had fewer errors presumably due to the fact that they had only one change to err on each frame (the device advanced to the next slide regardless of correctness). The other three reinforcement groups did not differ in error rate. On the post test, there was no difference in performance among the four reinforcement groups. No color prompting effects nor image size effects were observed.

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Owen, Thomas

"Project LIFE System Evaluation Study"

Institutional Study, 1971
Computer Based Project
Syracuse Public Schools
Syracuse, New York

Mentally retarded (C.A. 10)
Hard of Hearing (C.A. 10)
Multiply handicapped

Summary: This study evaluated 1) classroom operation by teachers, 2) program's (LIFE) ability to meet its stated objectives, and 3) adequacy of individual frames. In terms of classroom operation of the system: Teachers scheduled students to use Project LIFE materials while they were working with a sub-group of the class on other instruction. There was some hesitancy to break up the classroom procedure, especially by one teacher who used a traditional structured classroom approach. Teachers tended to use the material selectively. While teachers were all enthusiastic, opinion was split on the issue of intensive-vs-selective use. Teachers reported generally enthusiastic responses by students. With MR children the authors cut the sitting to 20 frames which pleased most of the children. Significant equipment failures were noted. (Tired relays on Program Master - remedied by scraping white residue from relay contact points.) The author reported informal evidence that the reinforcement properties of the system were inadequate to encourage low error rates. Based on data from one Hard of Hearing group and one retarded group, the tentative conclusion was reported that the materials accomplish their stated objectives as measured by the criterion tests. Some sections appeared to be too difficult - the most difficult requiring 2.12 and 2.32 presentations of the teaching filmstrip before the students reached criterion. Further, teachers reported having to give considerable assistance. Frame-by-frame analysis in unit 1 found only one clearly ambiguous item (in the Unit 1 test 3 Language/Reading). It was emphasized that students seem to need more reinforcement than the system itself provides. The report concluded that the system "seems to work even with our retarded children."

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Mead, Charles

"Report on the Project to Evaluate the Thinking Skills Activities Series"

Institutional Study, 1973
Syracuse Public Schools, Syracuse, N.Y.

Educable mentally retarded and learning disabled
Primary and intermediate age

Summary: Most EMR students in the sample required the presence of an adult while they used the Project LIFE machine. Students did profit from the Project LIFE program but "each child presented a new situation to be dealt with by the teaching assistant." Repetition of filmstrips until the 80% criterion was met was objected to by the students.

Within a sub-study a group of 4 EMR students made noticeable gains as measured by the Stanford Binet during a nine-month period including evaluation and convergent production (14 mental age months gain), classes (12 mo.), relations (12 mo.), systems (11 mo.), implications (11 mo.), transformations (18 mo.), and figural (23 mo.). Especially noted for this group was a gain of 26 months in Divergent production which, it was thought, would not be developed by forced choice programming.

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Vockell, M. Karen L.

"Language for Deaf Students with Other Learning Impairments: Evaluation of Project LIFE"

Masters Thesis, 1972
Purdue University, Lafayette, Indiana

Deaf Students (C.A. 9-10)
(I.Q. 61-78)

Summary: This study used a pre-post test design (no controls) conducted in two phases. Two groups, A and B were formed. Group A used the Perceptual Training program in 1970 and the Thinking Activities program in 1971. Group B used the Perceptual Training program in 1972. Group A was measured one year following training (perceptual training) and (at the same time) took the Thinking Activities test. Group B took the perceptual training test only. Thus the perceptual training post test was considered a retention test for Group A.

The test used was a specially constructed test composed of sample items from Project LIFE tests. On the perceptual training tests, Group A scored better (a year earlier) on the pretest. There was no difference when comparing post-test scores for Groups A and B, thus showing a strong retention effect for Group A. Group A and B differences on the pretest can be largely accounted for by the performance of two subjects in Group B. On the post test, these individuals scored very high and very similar to other individuals in the group.

Subjects were selected from students slated for summer school attendance in two successive years and selection was not random.

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Mead, Charles

"The Effects of Project LIFE on Children With Language Disabilities" (A Preliminary Report)

Doctoral Study, 1973 — Learning Disabled
Syracuse University, Syracuse, N.Y. — (C.A. 6.0-13.0)

Summary: The study included investigating the effects of Project LIFE Perceptual Training materials and Thinking Skills Activities materials as measured by changes in the ITPA. The study took place over a six week period. Significant changes occurred in several subtest categories favoring the Project LIFE students including the following:

Visual closure gain	experimental 10.6	control 4.0
Visual Represnetation (tests 2, 4, 6)	experimental 6.2	control 1.4
All visual tests (tests 2, 4, 6, 8, 10)	experimental 15.9	control 9.4

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Holman, Gary and Spidal, David

"The Utilization of Project LIFE with Indian Children - A Pilot Study"

Institutional Study, 1971 — Indian Children (C.A. 6-8.5)
Idaho State University, Boise, Idaho — Bilingual

Summary: Thirty-five Indian students were divided into four groups, two control groups and two experimental groups. The twenty children in the experimental group completed an average of twenty filmstrips each in four weeks. There was significant improvement from pretest to post-test scores for the experimental groups in word recognition, sentence reading, and paragraph meaning, as measured by the Gates Primary Reading Test. The control group also showed improvements. By factoring out the language spoken at home in both groups (control and experimental), the experimental group made the greatest achievement.

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Mitchell, Harold R. and Whitehead, Judith

"Project LIFE Language Training Program for Some Children in the Model Cities Program"

Cooperative Study, 1972
Institutional reference unclear

lst and 2nd graders (low scorers on Frostig Perceptual test)

Summary: The study compared effects of Project LIFE Perceptual Training materials with effects of a traditional perception training program in terms of pre-post gain measured on the Frostig Perceptual test. Forty low scorers (Frostig) were divided into control and experimental groups. The experimental group (Project LIFE) used the thirty filmstrips series of Perceptual Training materials during a nine-month period. The study further tested the hypothesis that there would be no difference between groups on the fiv subtests of the Frostig at the end of the training period. The subtest scores were averaged to determine a combined Frostig score. There were no significant differences in group performance on the pretest combined score measure.

After instruction there were no differences between the groups on the Frostig post test. Neither the experimental nor control groups made significant gains from pre to post test as measured by the Frostig subtest or combined scores.

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Other Reported Utilizations

of the Project LIFE Instructional Program

Situation: Group instruction (teacher controlled)

1974
Students: Hearing Impaired C.A. 7-9 years

Summary: Teacher used a dittoed response sheet in conjunction with the Project LIFE Perceptual Training materials. Students (with one exception) performed well. Sets 1-4 and Set 6 were employed. Set 5 was not used due to high scoring on the pre-test.

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Situation: Group instruction (teacher aide controlled)

1972

Students: Hearing Impaired Preschool Through Grade Six

Approximately 140 students systematically used the Project LIFE materials two or three times a week for about a 25-minute period each. The teachers participated in the program by providing follow-up activities in the classroom based on the instructional objectives. The machine and materials were used under the full-time direction of a teacher's aide. After one year, the average grade level increment for the students changed from a pervious +.5 to an average increment of +1.6. Other programs were involved in the learning center and how much can be attributed to Project LIFE and how much to other means is not determinable.

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Situation: Individual instruction

1971
Students: Deaf (primary level)

The Student Response Program Master was viewed as a very useful means of reinforcement. Individual instruction was found to be much more useful than a group approach using the same materials.

It was noted that the "green light" as a reinforcer may need to be taught. The teacher should use other means of reinforcement at the outset. The teacher can "shape" the student until the light becomes an effective reinforcer. It was suggested that the perceptual and thinking filmstrips could be used by students from about 4 years to 12 years of age.

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Situation: Migrant Children

1971
Students: Non-English Speaking

Project LIFE materials were used with non-English speaking children in the classes at Eagle Pass, Texas. The students made substantial increases in their vocabulary development and understanding of the English language structure. The materials supplemented with a basal reading series being used. The children were delighted with the story supplements. In addition, the exercises were especially helpful in straightening out grammatical concepts and in the building of confidence in their own abilities. With the Perceptual Training Programs, the Project LIFE materials helped reduce confusion between letters such as "p" and "q" and "d" and "b".

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Situation: Clinical

Undated
Students: Language Dysfunction

Criteria for therapy were: (1) low scores on the ITPA, and (2) a level of achievement functioning at least 18 months below chronological level. The use of Project LIFE materials was very effective in helping the children to organize their vision to look for detail and to develop thinking skills. There was much transfer of information into the reading skills with the teachers in the classroom. Pediatricians are referring students regularly to the clinic for language evaluation and therapy with the LIFE materials. Most of the children have increased their reading skills anywhere from one year to two years in a six-month period using the LIFE materials.

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Situation: Individual use - in Learning Center

Undated
Students: Hearing Impaired, High School Age

Traditional textbooks (reading) have been eliminated. Project LIFE and other individualized materials are used. An aide monitors use of the Project LIFE materials. Students come to the learning center during the academic period (by classes). A daily report on progress (filmstrips completed and error data) are sent back to the teacher. Students may use the materials (any materials) in the evenings.

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Situation: Group Instruction

1972
Students: Hearing Impaired (C.A. 11-13)

Language Reading materials were used. After filmstrips were mastered (selected filmstrips) the teacher shows the strip in group session and has students write correct answers from memory or has students construct sentences using the same form but varying pronouns, verbs, nouns, prepositions, etc.

.....

Situation: Individual Work Out-of-Classroom

1974
Students: Hearing Impaired (C.A. 11-14)

Students went to the A-V center for use of Project LIFE. The A-V specialist supervised the activity. The situation was terminated due to the feeling that if the work were done in the classroom, the teacher could provide better follow-up and more students could be reached (in a group instruction approach). An answer sheet was developed (and answer keys) to facilitate group instruction.

.....

Situation: Group Instruction

1971
Students: Teenage Boys Hearing Impaired With Learning Disabilities

Students preferred group to individual instruction. Attention was good. Filmstrips were frequently too long for the students. It was suggested that with around 30 frames interest was maintained quite well. When filmstrips exceeded 40 frames, the students often became restless. The group started out using filmstrips on an individual basis and then switched to group use.

.....

Situation: Special Class (Individualized Use)

1971
Students: Deaf (Rubella)

The Project LIFE materials were one component of a variety of activities and instructional media in the program. As a result of the program, several students were promoted from the special class to regular classrooms for the deaf. The curriculum for the classroom was individualized according to needs and levels of ability. Project LIFE was used as an integral part of this program. The perceptual training and reading readiness efforts were carried out with the Project LIFE series and with other supplemental work. Credit for the quick achievement of reading skills for this group was attributed to the perceptual training series of the Project LIFE system.

.....

Situation: Kindergarten Transition Class

1971
Students: Severely Deaf (Rubella) (C.A. 7-8)

Students completed the Perceptual Series. Two students completed the Thinking Activities Series Sets 1-8 as well. Teachers coordinated the vocabulary with the Peabody Rebus, making rebuses for words not included. The more mature students were able to use the Project LIFE books with minor adaptation.

.....

Situation: Center For Emotionally Disturbed

1971
Students: Autistic

The students in a pilot investigation using the Project LIFE materials were at a school where behavioral modification techniques were used with severely autistic children. In the pretraining program with Project LIFE, a teacher's aide spent approximately one half hour daily with a student. The student was taught to match like symbols on squares of paper. Then to make the transition to the machine and filmstrips. However, the student would not press the button after indicating which one it was. Some other students began to function at the machine and respond to some of the materials, but the program was abandoned since the concept and approach was not in agreement with the philosophy of the school.

.....

Situation: Hospital

1972
Student: 8 1/2 year old quadraplegic boy

An 8 1/2 year old quadraplegic boy, who was injured in a snowmobile accident, utilized the Project LIFE programmed filmstrips and the Program Master in a hospital setting. The boy used a "mouthstick" with which he responded to the Student Response Program Master. His subjective sense of personal achievement was enhanced and a noticeable difference was reported by the staff. The boy's oral fluency was dramatically regained by encouraging him to read aloud the stimulus materials. Results indicate that physical handicaps do not need to be a deterrent to self-instruction.

.....

Situation: Parent - Student Instruction

1972
Student: 8 year old learning disabled

A girl, diagnosed as having a functional learning disability, was tutored at home during the summer by her parents using the Project LIFE System. During the period of the investigation, the girl steadily progressed through the instructional system in the order of perception, thinking, and language reading development. The materials served as a prescriptive base and remedial instruction. The area that caused greatest difficulty was memory skill task. Extra emphasis was placed on those filmstrips which related directly to memory. After the completion of the Perceptual Training and the Perceptual/Thinking materials, the young girl moved into the Language/Reading materials. She increased her vocabulary by known quantity of 158 words. She learned to assemble new words into sentences. At the completion of the investigation, she asked to read books and she was willing to accept new "risks" of unknown words. This behavior was in clear contrast to her outlook at the beginning of the investigation.

.....

Situation: Open Classroom

Undated
Students: Non-Handicapped and Bilingual (C.A. 6-8)

The Project LIFE materials area was one of eight stations in the learning center for individual activities. The classroom had several bilingual students as well as the normal range of intellectual and educational abilities. Students waited in line to be part of the Project LIFE learning center situation. All students in every category made substantial gains on standard measures, but it is impossible to attribute the gains to any specific activity. The Project LIFE test filmstrips did indicate a high degree of learning in all areas of perception, thinking, and reading for all students involved. Most benefit was obtained by the bilingual students who were given additional time on the LIFE materials.

.....

Situation: Clinical

Undated

Students: Reading Disabled

Seventy-nine students referred to a clinic because of reading and behavior problems were studied. Most of the students tended to have difficulty with the visual memory tasks in the Perceptual/Thinking area. Some of the diplexic students exhibited characteristics similar to those of aphasic adults in the areas of reading and language. The students did not have difficulties with visual perception as reflected (defined) in the Perceptual Training Series. Most students made significant gains, as much as two years in reading, during the six months using Project LIFE materials.

.....

Situation: Public School

1971
Students: Aphasiac - Learning Disabled

Project LIFE materials were used in conjunction with other learning and teaching tools in a two year program for instruction of aphasiac children. After the two years of instruction and testing, a number of students were reclassified as having learning disabilities. LIFE materials were used primarily for perceptual training, thinking and reading introduction purposes. Most of the students did show advances in their ability to comprehend printed material.

.....

Appendix E

Partial Listing of Research and Evaluation Forms

Listing of Research and Evaluation Forms

(In Order of Occurrence in Appendix E)

1. Prototype Evaluation Forms:

   (A). Intermediate Reading Series 137

   (B). My Verb Pictionary 142

   (C). Picture Vocabulary Cards 146

2. Internal Production Control Form 149

3. Developmental Test Record Forms 150

4. Field Evaluation Data Collection Form 152
   (Where Errors are Monitored on a Frame-by-Frame Basis)

5. Order Form (for Project LIFE Data Forms) 154

6. Sample Student Progress Forms 155

LIFE INTERMEDIATE READING SERIES

Project LIFE is planning to prepare a series of twenty-four (24) reading filmstrips at the third - fourth grade reading level. When these are complete, each filmstrip shall have a lesson guide and other supplements, the scope and content of which is not yet determined. The purpose of this evaluation is to assess two of these proposed stories for technical problems, format (style), reading level (vocabulary and language), and other factors.

The two stories have been prepared on slides for evaluation purposes only. It is anticipated that they would eventually be distributed in the filmstrip format. Please use these stories in your class and then complete the evaluation form. It might be advisable for you to preview the stories prior to using them with your class.

The Project LIFE programmers have noted several technical and/or grammatical problems within these two stories. However, you may note others so feel free to make any comments that you feel are appropriate. Providing the Reading Series is deemed desirable by the teachers, these two stories would be revised prior to commercial distribution.

We would greatly appreciate your candid and frank opinion/evaluation. Project LIFE is interested in developing instructional materials that teachers will find functional and that children will discover to be meaningful, educational, and interesting.

May we (LIFE, USOE, BEH, NEA, NFIE) thank you in advance for assisting us.

EVALUATION FORM

LIFE Intermediate Reading Series

Name of School _____ Teacher _____

Number of children in classroom _____
Age range of children _____
Reading level of children _____

Please indicate your response to each item by circling the number (or N.C. -- No Comment) that most closely corresponds to your personal reactions.

A. For which grade level do you feel the stories are most appropriate?

6 5 4 3 2 NC
Grade Level

B. The stories are of interest to the students.

5 4 3 2 1 NC
very much not at all

C. The pictures are appealing to young children.

5 4 3 2 1 NC
fully agree strongly disagree

D. My students have a desire to return to the stories after they have finished reading them the first time.

5 4 3 2 1 NC
frequently never

E. The type size of the stories is:

5 4 3 2 1 NC
too large adequate too small

F. The number of words per picture is generally:

5 4 3 2 1 NC
too many adequate too few

If too many, which frames are you most concerned about? _____

_____

G. The anticipated general story lengths of about thirty (30) frames each is:

5	4	3	2	1	NC
too long		adequate		too short	

H. A teachers guide for each story is needed.

5	4	3	2	1	NC
fully agree				strongly disagree	

I. Student work sheets (to check comprehension or to allow expressive language expansion) should accompany each story.

5	4	3	2	1	NC
fully agree				strongly disagree	

J. These stories can best be used with groups of students rather than with individual children.

5	4	3	2	1	NC
agree				disagree	

K. The stories might also be used advantageously for individualized work.

5	4	3	2	1	NC
agree				disagree	

L. Does the word content appropriately correspond to the visuals, or vice versa?

2	1	NC
yes	no	

If no, which frames seem to be most inappropriate?_____

_____

M. The visuals are generally clear and unambiguous.

5	4	3	2	1	NC
agree				disagree	

N. On one of the stories -- "Cat and Dog" -- the background behind the type changes colors from frame to frame. This procedure is:

5	4	3	2	1	NC
excellent		adequate		distracting	

O. One story -- "Bear's House in the Woods" -- has considerably more lines of type and more words per frame than the other story. The story with the larger number of words per frame is:

5	4	3	2	1	NC
strongly preferred				highly undesirable	

P. The story line (theme) in each program is easy for the children to follow.

5	4	3	2	1	NC
agree				disagree	

If you disagree, which story presents the children with the greatest difficulty: _____

_____

_____

Q. Of the two stories, I prefer the "Cat and the Dog Playing" _____/"Bear's House in the Woods" _____. (Check one)

Why: _____

_____

R. The stories should also be produced in booklet form without color and without type to be used as a "Childrens Coloring Book" and for the children to write their own stories.

5	4	3	2	1	NC
fully agree				strongly disagree	

S. Providing Project LIFE takes into consideration the factors that I have stated on this questionnaire, I feel that the development of the twenty-four (24) filmstrips in an intermediate reading series is very worthwhile and should be pursued.

5	4	3	2	1	NC
fully agree				strongly disagree	

List any other reactions which you feel should be considered by Project LIFE in assessing the value and modifications needed in these stories.

Suggest some ways that these stories might be used.

Thank you for taking the time to respond to this request.

My Verb Pictionary

The Verb Pictionary contains 125 frequently used verbs in the future, present progressive, and/or past tenses. This book is designed to assist the child in better understanding the meaning of the verbs and their tenses.

The verbs are arranged alphabetically. The alphabetical index has been added along the outer margin of each page for ease in finding words.

This booklet is a prototype and was developed for evaluation purposes. Some technical problems are noted below:

1. Lack of minority group representation in the visuals
2. Reverse pages 7 and 8 for alphabetical arrangement
3. Reverse pages 104 and 105 for alphabetical arrangement
4. Add the word comb on page 22 and the word wait on page 117
5. Reverse sentences on page 9
6. Change red to new on page 122
7. Reverse the words box and break in the index

The returned Evaluation Forms will be carefully reviewed to determine whether the Verb Pictionary warrants commercial distribution and, if so, what modification should first be made.

EVALUATION FORM

My Verb Pictionary

Name of School _____ Teacher _____

Number of children in classroom _____
Age range of children _____
Reading level of children _____

Please indicate your response to each item by circling the number (or N.C. -- No Comment) that most closely corresponds to your personal reactions.

A. The Verb Pictionary will be of much benefit to my students.

5 4 3 2 1 NC
fully agree strongly disagree

B. The booklet is child oriented.

5 4 3 2 1 NC
agree disagree

C. The style of art is appealing to children.

5 4 3 2 1 NC
agree disagree

D. One color, such as red, would be better than the several colors now used.

5 4 3 2 1 NC
agree disagree

E. The booklet should be fully colored rather than primarily black and white.

5 4 3 2 1 NC
agree disagree

F. The format of the book is good.

5 4 3 2 1 NC
agree disagree

G. The indexing of the booklet may prove helpful and is good.

5 4 3 2 1 NC
agree disagree

H. The usage of the three verb tenses on each page is a good technique.

5	4	3	2	1	NC
agree				disagree	

I. Each child should have a copy of this booklet.

5	4	3	2	1	NC
agree				disagree	

J. Rather than each child having a personal copy of the booklet, it might better be used as a reference book in the classroom or school library.

5	4	3	2	1	NC
agree				disagree	

K. The design of the cover is appropriate.

5	4	3	2	1	NC
agree				disagree	

L. Other than the errors noted, all of the pictures are appropriate for the sentences.

2	1	NC
yes	no	

If no, list the words that might cause confusion:

List specific reactions and recommendations.

Suggest some ways that My Verb Pictionary might be used.

Thank you for taking the time to respond to this request.

EVALUATION FORM

Project LIFE Picture Vocabulary Cards - Level I (Units 1-8)

Name of School _____ **Teacher** _____

Number of children in classroom _____
Age range of children _____
Reading level of children _____

Please indicate your response to each item by circling the number (or N.C. -- No Comment) that most closely corresponds to your personal reactions.

A. Vocabulary cards, in general, are useful materials.

5	4	3	2	1	NC
fully agree				strongly disagree	

B. Cards to extend the LIFE language system are important.

5	4	3	2	1	NC
agree				disagree	

C. The pictures on the cards are clear and concise.

5	4	3	2	1	NC
agree				disagree	

D. The pictures are child oriented.

5	4	3	2	1	NC
agree				disagree	

E. The coloring adds to the effectiveness of the cards.

5	4	3	2	1	NC
agree				disagree	

F. Each child should have his own set of cards.

5	4	3	2	1	NC
agree				disagree	

G. The words at the top of the cards should be:

5	4	3	2	1	NC
considerably larger				significantly smaller	

H. The coding of Unit (Set) and Section at the top of each card is an appropriate technique.

5	4	3	2	1	NC
agree				disagree	

I. The sentence in black with the word in red is an appropriate technique.

5	4	3	2	1	NC
agree				disagree	

J. The coding (see H), as is, is distracting to the students.

5	4	3	2	1	NC
agree				disagree	

K. All of the pictures are appropriate for the sentences.

2	1	NC
yes	no	

If no, list the words that might cause confusion: _____

_____

_____

L. The front of the card should only contain the new word in large print with the picture and sentence on the back.

5	4	3	2	1	NC
agree				disagree	

M. The size of the card (4" X 6") should be:

5	4	3	2	1	NC
larger				smaller	

N. The weight of the paper on which the card is produced should be:

5	4	3	2	1	NC
heavier		same		lighter	

O. An index box in which the cards are filed and stored is needed.

5	4	3	2	1	NC
fully agree				strongly disagree	

List any other reactions which you feel should be considered by Project LIFE in assessing the value and modifications needed in the cards.

Suggest some ways these cards might be used.

Thank you for taking the time to respond to this request.

CONTROL SHEET

Shipment Date _____

Testing Date _____

Slide Date _____

UNIT _____ SECTION _____ RESPONSE PATTERN _____

PROGRAMMER _____ ARTIST _____ PRODUCTION _____

ACTIVITY	REVIEWER'S INITIALS AND DATE OF REVIEW
UNIT OBJECTIVE TEST	_____ Prog _____ Prog _____ Prog _____ Prog _____ Assoc Dir
PROGRAM	_____ Prog _____ Prog _____ Prog _____ Prog _____ Assoc Dir
TYPE	_____ Prod _____ Prog
ART	_____ Artist _____ Prog
OVERLAYS	_____ Prod
PRE-CAMERA REVIEW	_____ Prog _____ Prog _____ Prog _____ Prog _____ Assoc Dir
SLIDES SHOT	_____ Prod
REVISIONS	_____ Prod _____ Artist _____ Prog
RELEASE FOR FILMSTRIP	_____ Prog _____ Prog _____ Prog _____ Prog _____ Assoc Dir

School _____

Class _____

Name _____

Date tested _____

Unit _____ Section _____

Time (Stop) _____
(Start) _____
(Total) _____

	□	+	○	△	COMMENTS
1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					
13					
14					
15					
16					
17					
18					
19					
20					
21					
22					
23					
24					
25					
26					
27					
28					
29					
30					
31					
32					
33					
34					
35					

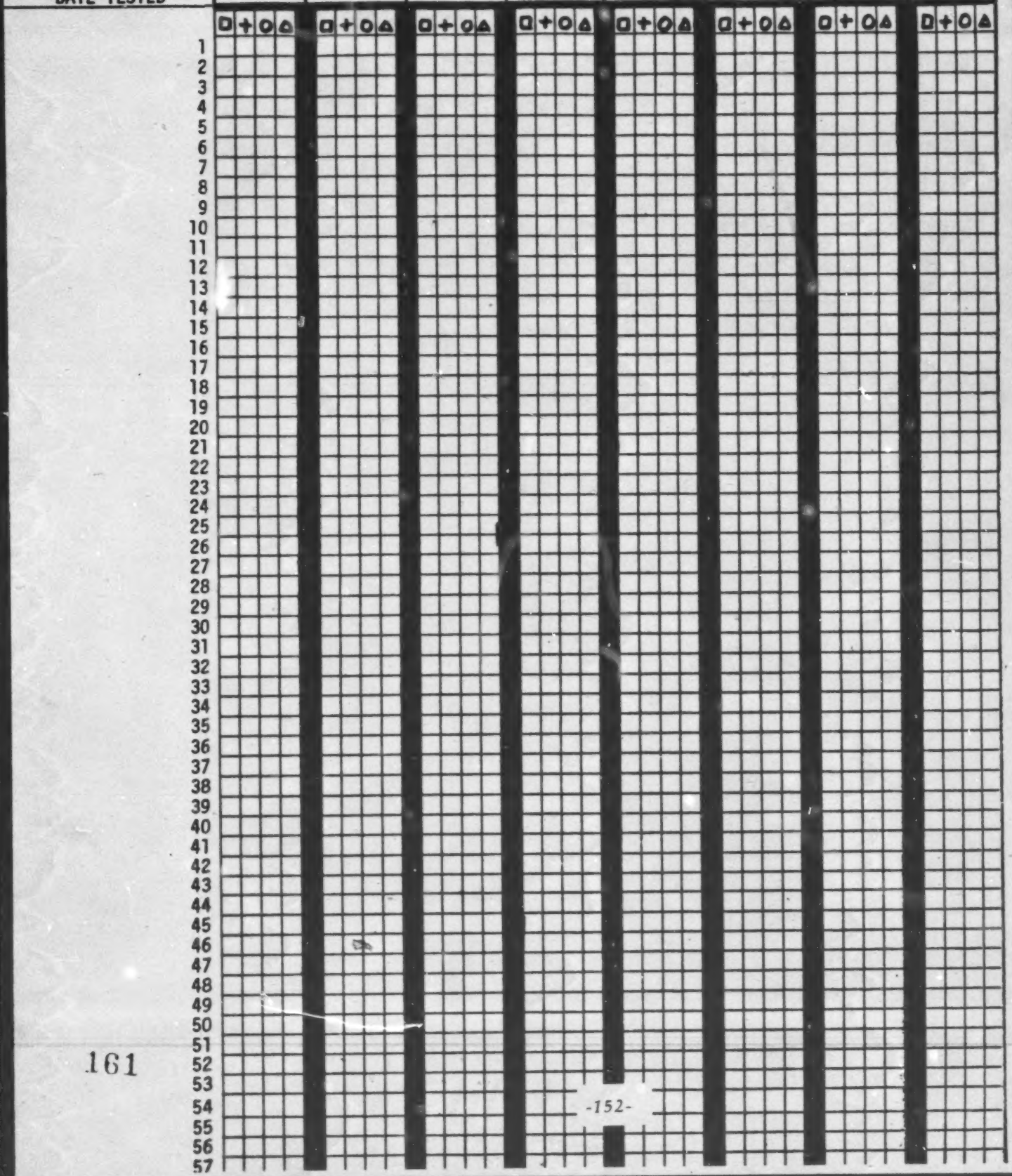
	□	+	○	△	COMMENTS
36					
37					
38					
39					
40					
41					
42					
43					
44					
45					
46					
47					
48					
49					
50					
51					
52					
53					
54					
55					
56					
57					
58					

Posttest

1					
2					
3					
4					
5					
6					
7					
8					
9					
10					
11					
12					

UNIT_____ SECTION_____ TITLE_____

CLASS								
NAME								
DATE TESTED								



Programmed Language Recording Form

State Code _____ Center Code _____ Pupil _____ Recorder _____

(Fill-in this information from the identification frame on filmstrip)

Unit No. _____ *Section _____

-- or --

No. of Frames _____ R _____

Story Supplement No. _____

*If this Section is a Test Filmstrip, do not use this form

SAMPLE FORM

DIRECTIONS

1) Insert proper response pattern plug into rear of machine. The number appearing on the plug is to be entered into the space above.

2) Depress the reset button at rear of machine several times. Do not touch this button again until the filmstrip finished.

3) Set the error counter at rear of machine back to zero.

4) When the child, using the machine, makes a correct response per frame, place an encircled (X) in the appropriate response column on the recording sheet.

5) If the child makes one incorrect choice per frame, place a 1 in the appropriate response column, and if another place a 2, and so forth. His final response for that frame must be a correct response, thus place a check mark (✓) in the appropriate column after having first identified the error response pattern for that frame.

6) In the column marked Errors, place a slash (/) against the appropriate number. Thus, if the Response Pattern row for Frame No. 1 was marked (X), no error, then 0 1 2 3 would be the entry.

Time Started _____

Errors	Frame No.	Response Pattern	Errors	Frame No.	Response Pattern
0 1 2 3	1		0 1 2 3	31	
0 1 2 3	2		0 1 2 3	32	
0 1 2 3	3		0 1 2 3	33	
0 1 2 3	4		0 1 2 3	34	
0 1 2 3	5		0 1 2 3	35	
0 1 2 3	6		0 1 2 3	36	
0 1 2 3	7		0 1 2 3	37	
0 1 2 3	8		0 1 2 3	38	
0 1 2 3	9		0 1 2 3	39	
0 1 2 3	10		0 1 2 3	40	
0 1 2 3	11		0 1 2 3	41	
0 1 2 3	12		0 1 2 3	42	
0 1 2 3	13		0 1 2 3	43	
0 1 2 3	14		0 1 2 3	44	
0 1 2 3	15		0 1 2 3	45	
0 1 2 3	16		0 1 2 3	46	
0 1 2 3	17		0 1 2 3	47	
0 1 2 3	18		0 1 2 3	48	
0 1 2 3	19		0 1 2 3	49	
0 1 2 3	20		0 1 2 3	50	
0 1 2 3	21		0 1 2 3	51	
0 1 2 3	22		0 1 2 3	52	
0 1 2 3	23		0 1 2 3	53	
0 1 2 3	24		0 1 2 3	54	
0 1 2 3	25		0 1 2 3	55	
0 1 2 3	26		0 1 2 3	56	
0 1 2 3	27		0 1 2 3	57	
0 1 2 3	28		0 1 2 3	58	
0 1 2 3	29		0 1 2 3	59	
0 1 2 3	30		0 1 2 3	60	

Time Finished _____

ORDER FORM FOR PROJECT LIFE DATA FORMS

Form #	Use	Number of Forms Requested
A-PL Series	Student Progress Reports for Language	
A-PL-1	For use with Units 1 and 2	
A-PL-2	For use with Units 3 and 4	
A-PL-3	For use with Units 5 and 6	
A-PL-4	For use with Units 7 and 8	
A-PL-5	For use with Unit 9	
A-PL-6	For use with Units 10 and 11	
A-PL-7	For use with Units 12 and 13	
A-PL-8	For use with Units 14 and 15	
A-PL-9	For use with Units 16 and 17	
B-PL	Graph for students progress for each unit	
C-PL Series	Self scoring response sheet for Unit tests	
C-PL-A	For Introduction to Association	
C-PL-1	For Unit 1	
C-PL-2	For Unit 2	
C-PL-3	For Unit 3	
C-PL-4	For Unit 4	
C-PL-5	For Unit 5	
C-PL-6	For Unit 6	
C-PL-7	For Unit 7	
C-PL-8	For Unit 8	

Project LIFE - Programmed Language

Student Progress Record
(Error Count)

Name _____ Age _____

UNIT 17

Pre-test (Section E):

Section A (2)* _____ Section C (3)* _____
Section B (1)* _____ Section D (2)* _____

Teaching Sections:

	Date Taken	Errors	Time		Date Taken	Errors	Time
Section A (11)**				Section C (11)**			
Section B (10)**				Section D (10)**			

Post test (Section E):

Section A _____ Section C _____
Section B _____ Section D _____

---

* Give Teaching Section if student errors are in excess of the number in parentheses.
** Repeat program with supervision if errors exceed the number in parentheses.

FORM A-PL-10

Project LIFE - Programmed Language

Student Progress Record
(Error Count)

Name _____ Age _____

UNIT 18

Pre-test (Section E):

Section A (2)* _____ Section C (2)* _____
Section B (2)* _____ Section D (2)* _____

Teaching Sections:

	Date Taken	Errors	Time		Date Taken	Errors	Time
Section A (10)**				Section C (11)**			
Section B (10)**				Section D (10)**			

Post test (Section E):

Section A _____ Section C _____
Section B _____ Section D _____

UNIT 19

Pre-test (Section F):

Section A (2)* _____ Section C (2)* _____ Section E (2)* _____
Section B (2)* _____ Section D (2)* _____

Teaching Sections:

	Date Taken	Errors	Time		Date Taken	Errors	Time
Section A (10)**				Section D (8)**			
Section B (9)**				Section E (10)**			
Section C (10)**							

Post test (Section F):

Section A _____ Section C _____ Section E _____
Section B _____ Section D _____

---

* Give Teaching Section if student errors are in excess of the number in parentheses.
** Repeat program with supervision if errors exceed the number in parentheses.

FORM A-PL-11

Project LIFE - Programmed Language

Student Progress Record
(Error Count)

Name _____ Age _____

UNIT 20

Pre-test (Section G):

Section A (2)* _____ Section C (2)* _____ Section E (2)* _____

Section B (2)* _____ Section D (2)* _____ Section F (2)* _____

Teaching Sections:

	Date Taken	Errors	Time		Date Taken	Errors	Time
Section A (10)**				Section D (10)**			
Section B (10)**				Section E (10)**			
Section C (10)**				Section F (9)**			

Post test (Section G):

Section A _____ Section C _____ Section E _____

Section B _____ Section D _____ Section F _____

UNIT 21

Pre-test (Section G):

Section A (2)* _____ Section C (2)* _____ Section E (2)* _____

Section B (2)* _____ Section D (2)* _____ Section F (2)* _____

Teaching Sections:

	Date Taken	Errors	Time		Date Taken	Errors	Time
Section A (10)**				Section D (10)**			
Section B (10)**				Section E (10)**			
Section C (10)**				Section F (11)**			

Post Test (Section G):

Section A _____ Section C _____ Section E _____

Section B _____ Section D _____ Section F _____

---

* Give Teaching Section if student errors are in excess of the number in parentheses.

** Repeat program with supervision if errors exceed the number in parentheses.

Project LIFE - Programmed Language

Student Progress Record
(Error Count)

Name _____ Age _____

UNIT 22

Pre-test (Section G):

Section A (2)* _____ Section C (2)* _____ Section E (2)* _____

Section B (2)* _____ Section D (2)* _____ Section F (2)* _____

Teaching Sections:

	Date Taken	Errors	Time		Date Taken	Errors	Time
Section A (9)**	_____	_____	_____	Section D (9)**	_____	_____	_____
	_____	_____	_____		_____	_____	_____
Section B (9)**	_____	_____	_____	Section E (8)**	_____	_____	_____
	_____	_____	_____		_____	_____	_____
Section C (9)**	_____	_____	_____	Section F (8)**	_____	_____	_____
	_____	_____	_____		_____	_____	_____

Post test (Section G):

Section A _____ Section C _____ Section E _____

Section B _____ Section D _____ Section F _____

UNIT 23

Pre-test (Section G):

Section A (3)* _____ Section C (2)* _____ Section E (2)* _____

Section B (2)* _____ Section D (2)* _____ Section F (2)* _____

Teaching Sections:

	Date Taken	Errors	Time		Date Taken	Errors	Time
Section A (11)**	_____	_____	_____	Section D (11)**	_____	_____	_____
	_____	_____	_____		_____	_____	_____
Section B (10)**	_____	_____	_____	Section E (10)**	_____	_____	_____
	_____	_____	_____		_____	_____	_____
Section C (10)**	_____	_____	_____	Section F (10)**	_____	_____	_____
	_____	_____	_____		_____	_____	_____

Post Test (Section G):

Section A _____ Section C _____ Section E _____

Section B _____ Section D _____ Section F _____

---

* Give Teaching Section if student errors are in excess of the number in parentheses.

** Repeat program with supervision if errors exceed the number in parentheses.

FORM A-PL-13

Project LIFE - Programmed Language

Student Progress Record
(Error Count)

Name _____ Age _____

UNIT 24

Pre-test (Section G):

Section A (2)* _____ Section C (2)* _____ Section E (2)* _____

Section B (2)* _____ Section D (2)* _____ Section F (2)* _____

Teaching Sections:

	Date Taken	Errors	Time		Date Taken	Errors	Time
Section A (8)**	_____	_____	_____	Section D (8)**	_____	_____	_____
	_____	_____	_____		_____	_____	_____
Section B (9)**	_____	_____	_____	Section E (8)**	_____	_____	_____
	_____	_____	_____		_____	_____	_____
Section C (8)**	_____	_____	_____	Section F (8)**	_____	_____	_____
	_____	_____	_____		_____	_____	_____

Post Test (Section G):

Section A _____ Section C _____ Section E _____

Section B _____ Section D _____ Section F _____

---

* Give Teaching Section if student errors are in excess of the number in parentheses.

** Repeat program with supervision if errors exceed the number in parentheses.

Appendix F

Marketing and Consultant-Critique Information

(213) 870-1370 776 0400

Loyola University of Los Angeles

LOYOLA BOULEVARD AT WEST 80TH STREET • LOS ANGELES, CALIFORNIA 90045

DEPARTMENT OF EDUCATION

December 12, 1971

RECEIVED
DEC 16 1971
Project LIFE

Glenn Pfau, Ph. D., Director
Project LIFE-NEA
1201 Sixteenth St, NW
Washington, D. C. 20036

Dear Dr. Pfau:

It was my pleasure meeting with you and your staff on December 9 & 10, 1971. Permit me to make a few observations and some evaluations of the purposes and goals of your project.

I have served as a consultant for many projects and centers across the country in the past three years. Nowhere have I seen the productive output that your project shows. I was impressed with several factors: 1) The quality and talent shown by all of the various departments of your staff, 2) the cohesiveness, cooperation and dedication of your staff members. These are not superlative observations made to make you 'feel good.' They are integral to the productivity which I observed.

It is without reservation that I note that in this day of tightened economies, of all the monies being expended from federal funds, your project is one which will and has eventuated in a return of such investment in a viable product which can eventually, if well publicised, make money for the money spent. Generally, then,' that alone is astonishing, but far beyond that eventual return is the actuality of a product and service in education which otherwise would not occur. For once, the goal is not another shot gun approach to teaching, for it does in essence, build upon a model of human intelligence for remediation of serious intellectual deficits which are involved in the ability to learn.

Specifically, I want to critique a) efforts to date and b) suggestions for future exploration and investment. Thus the following section is tendered in the form of a chart.

(See attached chart, please)

Mary Meeker, Ed. D.
Director of Training
School Psychology

3760 Dallas Road
Salem, Oregon 97304

RECEIVED
MAR 30 1972
Project LIFE

Dr. Glenn S. Pfau, Director
Project LIFE
1201 Sixteenth Street N.W.
Washington, D.C.

Dear Dr. Pfau:

It was indeed my pleasure working with you and the Project LIFE staff last week during my trip to the East. I detected during my brief time there a very creative staff dedicated to the purposes and developmental programs of your tremendous project.

You are unique as a federally funded project in that you are at the forefront of producing soft ware for individual childrens use as well as for classroom teachers use in the development of language; figural, symbolic and semantic discrimination; certain thinking processes; and supplemental materials all for motivating learning.

It is with regret that your materials are still exclusively developed and promoted for use with handicapped children. As I sat, watched and listened my one thought was how stimulating these materials would be for preschool language programs; with average, normal pupils or even gifted children who are poor readers or unmotivated learners. In fact, the materials would be enticing for many parents of potentially talented or precocious children for use in the home. You should be strongly encouraged to expand your functional development and dissemination of these materials, especially the thinking programs, for use in a whole host of educational endeavors other than for the deaf.

We are grateful for your help in installing and testing the effectiveness of your materials as a pilot study in our Great Falls, Montana, Title III district wide project for gifted first and second grade children in two of our learning resource centers, for children with learning disabilities in the special education center, and for identified potentially gifted deaf children in the deaf school. For this help we will be glad to give you feed back on all of our longitudinal data on these children throughout the next two years of this initially funded three year longitudinal study.

In the attached critique I should like to summarize my visit by commenting on your efforts to date followed by specific suggestions, with enclosed materials, for help in future exploration, development and dissemination of Project LIFE materials.

Please do not hesitate to let me know if I can be of further assistance in adding to the exciting productions you have already so adequately designed. I would be particularly intrigued with attempting to design some divergent thinking tasks which could either follow your existing convergent thinking frames or be supplemental tasks for teachers as adjunct materials to your already available filmstrips.

I shall be glad to meet you here in Oregon on your next visit either at the "onion farm" or at my home office here on the Willamette River. Best regards to all.

Sincerely,

Frank E. Williams

FEW/jr
encls-4

Consultants

RECEIVED
MAY 31 19[illegible]
Proj[illegible]

California State College, Bakersfield
9001 STOCKDALE HIGHWAY • BAKERSFIELD, CALIFORNIA 93309

May 26, 1972

Mr. Glen S. Pfau, Director
of Project LIFE
National Education Association
1201 16th Street, Northwest
Washington, D. C. 20036

Dear Mr. Pfau:

It was a pleasure to be involved with your staff in an analysis and evaluation of the materials that have been developed by the project LIFE'S staff during my recent visit to Washington D. C. The congenial manner as well as the professional skill and insight which the members of your staff exhibited was remarkable.

The quality of the materials which project LIFE has developed exceeded my expectations. The student response equipment is simplified enough that it can be operated by a very young child or a handicapped child or adult with ease. On the other hand it appears to provide the kind of feedback that is significant. Some of the problems that have plagued other groups, such as writing workable behavioral objectives, have been eliminated or minimized by your staff.

It is apparent that the materials have been prepared in consultation with the experts from several areas. Good teaching techniques are followed. The materials are linguistically sound. The topics covered in the filmstrips are very similar to the topics contained in Van Allen's LANGUAGES EXPERIENCES IN READING published by Encyclopedia Britannica Press. The concept of individualization is inherent. Cultural bias is at a minimum.

From my frame of reference I would make the following suggestions: (1) An audio portion should be developed for the program to increase its utility with black and non-English speaking children; and (2) material with greater concept density and a higher reading level should be developed for older children who have incurred reading disability.

I am interested in using the material in a research project. If your staff has developed any guidelines for writing a proposal for such a project, I would like to receive them.

Sincerely,

Carl E. Miller

Carl E. Miller
Professor of Education

CEM:cj
CB(k):04

programs, materials and techniques

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The Journal of Learning Disabilities

This month the section begins with a review of Project LIFE which is a series of programs using a novel teaching machine. Head Start teachers and those with many young learning disability children would do well to look into this series.

The psychologists (and others) among our readers will be interested in Dr. Donald Holmes' refreshing book, Psychotherapy. *It is intended for anyone interested in the topic and I found it excellent.*

Those interested in the adolescent with learning disabilities (that includes almost all of us) will read my review of The Educator's Enigma *with close attention. There is room for much more research on adolescents with learning disabilities and how best to treat them.*

Also reviewed are Specific Helps for Specific Learning Disabilities, *a book which suggests remedial activities for specific perceptual deficits, and the* Sensory Programmer, *a kit of 10 tasks to help children in achieving readiness in various perceptual and motor skills.*

For my own contribution this time I have chosen the topic of auditory closure. If I was asked to name one language processing deficit which was most often found in learning disability children I would be hard put to decide between auditory closure and auditory sequencing memory. Coding would be a close third.

PROJECT LIFE: LANGUAGE IMPROVEMENT TO FACILITATE EDUCATION. *Glen S. Pfau, Director, Project LIFE, National Institute of Education, 1201 Sixteenth St. N. W., Washington, D.C. 20036, 1972.*

Ten years ago I carried out a study of teaching machines for the Inner London Education Authority. Using a complex research design to avoid any sequence bias of teachers, schools, or children, I found that the teaching machines and programs then available for elementary school use were no better than teachers at inculcating knowledge and that the main stumbling block of machines and programs was a dearth of student motivation. Kids were soon bored with becoming mechanical lever pullers and button pushers once the initial novelty wore off.

Recently Dr. Pfau came into my office with an ingenious yet simple machine and a set of

Edited by: Alex Bannatyne, Ph.D.

very original programmed filmstrips. Within two minutes of setting up the projector and response machine on my desk, I was having a really fun time selecting buttons, working through the colored frames, solving all kinds of problems systematically organized in attractive, interest-holding programs. After a decade of mistrust, I am converted back – at least to this child-centered version of programmed instruction.

All too often when we are teaching children, we forget that we are as much teaching them *how* learn as *what* to learn. Unprogrammed lessons of the usual kind tend to teach a child that he will make frequent mistakes which will be corrected by the teacher. This erodes his confidence and self-concept. However if a specific curriculum is thoroughly task-analyzed into very small steps, the possibility of student failure is minimized; with constant success his self-concept is bolstered. Add to this an instant self-correcting mechanisim and you also have a happy child – not frustrated by tasks which only the teacher can solve for him.

The concept of Project LIFE is a systematic approach to help the language-impaired child acquire a functional language system. The instructional system of Project LIFE is easy for teacher and student to master. In planning the programs a careful assessment is made of the child's needs. Only those vocabulary and language concepts that have a definite functional value for the child are programmed. The project staff have even developed "Fun Supplement Filmstrips" which reward the child for the satisfactory completion of a unit, reinforce the language taught in a given unit, and extend the meanings to new and different situations. The supplements which provide him with stories he can read and enjoy independently, stimulate his imagination.

The Student Response Program consists of the programmed instruction filmstrips and a response device called a Student Response Program Master on which the student presses keys to select his choice of answers to the questions presented to him. If the student selects the correct key, the green key marked "GO" lights up, and he advances to the next frame in the filmstrip. It will operate most remote controllable filmstrips or slide projectors.

Features of the Student Response Program Master include: ability to provide a multiple-choice response available to the student, confirmation of the correct answer selection, and student learning by the need to find the correct answer to advance. The program master is easy to operate for the student and can be connected with a wide variety of remote control projectors (slide, filmstrip, and movie). Eight response patterns eliminate the memorizing of answers. The machine records the number of errors made by the student to determine progress and areas needing attention.

The Project LIFE perceptual training materials consist of 30 programmed filmstrips to assist in the child's development of specific visual perceptual skills. The filmstrips are designed for use prior to language instruction; the primary population is the four-to-six-year-old child. The series can also be advantageously used for remediation of identified visual perceptual problems in older children.

The Project LIFE thinking activity materials are a series of 102 teaching and testing filmstrips divided into six levels of difficulty. The lower levels, primarily visuals, concentrate on those specific thinking activity skills that should be acquired during the preschool years

(see Figure 1). The intermediate levels, a picture and language mixture, concentrate on those skills essential for success in the lower grades. The higher levels, primarily language, extend the earlier skills and introduce additional tasks that lead toward academic success.

The Project LIFE language series consists of 178 filmstrip lessons which provide visual input of receptive language. The child is progressively introduced to language principles, concepts, and basic sentence patterns.

Each set has a theme or general topical area such as self, animals, food, clothing and shelter. A test section is provided for each language set. The test can be used to determine the child's needs, to evaluate his level of mastery of the materials, or for periodic review of previously learned language concepts. The Level I filmstrips (55) present singular and plural nouns, verbs in present progressive form and past tense, agreement of subject and verb, pronouns, and their antecedents, prepositions, possessives, and simple sentence patterns in both statements and question forms. The Level II filmstrips (59) present additional functional words, possessive and object pronouns stressing antecedents, adjectives that describe feelings, imperative mood (request) and future tense of verbs, and additional question forms. The Level III filmstrips (59) present the use of the infinitive, the past progressive form of verbs, "going" meaning intention and additional question forms, verbs, and adjectives (see Figure 2).

The majority of materials are produced in a filmstrip format to be used in a remote-control filmstrip projector. The programs in each area are carefully sequenced so that the child can make satisfactory progress through the individual subsystems, working independently, but in close conjunction with the teacher and classroom curriculum.

In language, the child is provided with thousands of meaningful language contacts that will increase his vocabulary level as well as his language structure competency. By successfully interacting with each frame in a program geared to his specific language needs, the child gradually and sequentially increases his ability to comprehend printed language and later to express his feelings, thoughts, and emotions.

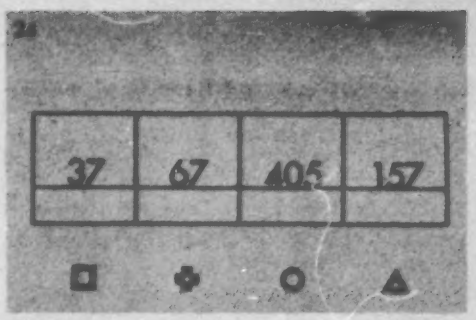


FIGURE 1. One of the frames from a filmstrip in the Thinking Activities series. The child selects the set of numbers which is most different from the other three sets. The set designated by the circle is the correct answer; it does not contain a number 7.

FIGURE 2. A frame from a story supplement in the early part of level 3 in the Language/Reading series. In this frame the student selects infinitive as the object in a sentence.

The system devised by Project LIFE already includes printed picture vocabulary cards, colorful reading books and a delightful verb dictionary. These are more for younger children and beginning readers.

Any school involved with language impaired children, handicapped children, Head Start programs, *young* learning disability children, and the deaf should definitely look into these LIFE Project instructional systems. The effectiveness of the system is being evaluated by General Electric as well as the Project LIFE research department. GE is analyzing reports and questionnaires completed by the purchasers of the system. Project LIFE has more than 39 formal research projects, as well as some 35 field test centers where the system is being extensively

evaluated in a variety of academic settings, with children having different handicapping conditions. Several of the investigations emphasize the usage of these materials with normal, bilingual, and culturally deprived children.

Project LIFE, the National Education Association, The U.S. Office of Education, and the General Electric Company have joined forces to provide a programmed instructional system for teaching handicapped and nonhandicapped children. The systems concept was designed, produced, and tested by Project LIFE and has been sponsored by Media Services and Captioned Films, Bureau of Education for the Handicapped, U.S. Office of Education.

Project LIFE

Affiliated with

National Foundation for the Improvement of Education
National Education Association
1201 Sixteenth Street, N.W.
Washington, D.C. 20036

Sponsored by

Media Services and Captioned Films
Bureau of Education for the Handicapped
U.S. Office of Education

Distributed by

General Electric/Project LIFE
Instructional Industries Inc.
Executive Park, Ballston Lake, N.Y. 12019

THE PAL* SYSTEM

for pre-school and elementary children

GENERAL ELECTRIC/PROJECT LIFE PROGRAM • NEW PAL PROGRAMS

"Have you ever rightly considered what the mere ability to read means? It is the key which admits us to the whole world of thought and fancy and imagination." James Russell Lowell

Developing basic language and reading skills for the language impaired child, through systematic programmed instruction, is the goal of Project LIFE. The project has been structured so that it is a developmental reading program when used in its entirety and is also a strong *remedial program* backed up by *diagnostic testing.* The program is a totally integrated approach to carry a child through acceptable skill levels, while assuming no prior learning. The testing section of the program allows for diagnosis of the individual child's needs, post testing for mastery evaluation, and periodic remedial and review work of previously learned language concepts. Motivation has been built within the program by colorful and meaningful visuals, a high probability of successful performance, and unique manner of responding.

The heart of the General Electric/ Project LIFE System is the PAL (Programmed Assistance to Learning) System, the programmed response-oriented filmstrips, and the various support materials. The child interacts primarily to the filmstrip, using a visually oriented response console. The console is a self-contained projector systematically integrated with a student response keyboard which allows the child to progress through the filmstrip, frame by frame. He must study each frame and make a selection by pushing one of a series of buttons which correspond to the possible answers. If the student's selection is correct, he receives immediate confirmation with the green "GO" light and is able to advance to the next question. *If the wrong key is pushed, the error is noted by the machine and no advance is allowed until the correct response is made.*

The result is a systematic approach to help the language impaired child acquire a functional language system.

PAL WILL HAVE SOUND (OPTIONAL) IN EARLY 1975

Equipment Characteristics and Specifications

Any filmstrip materials may be used with the PAL System or the Student Response Program Master, by use of the code bypass switch. This feature allows viewing or previewing any filmstrip materials.

Remote Control of other visual devices* is a feature provided by both the PAL System and the Student Response Program Master. This provides the user with the capability of *preparing his own materials* in the form of slides, prior to filmstrip production.

Projector features include high quality film advance mechanism for positive framing, simple threading guides to prevent filmstrip damage or scratching, easy lamp replacement and lens removal for cleaning.

A PAL System.....No. 4000/$399.00

Self-contained student response console. Rear projection screen 7¼" x 9½". Unit size: 12" x 14½" x 15¼". 120 volts, 350 watts.

B Student Response Program Master No. 5000/$248.00
No. 5001/Screen/$15.00
Cord/$9.75

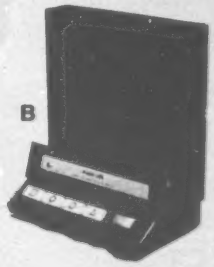
Requires attachment to remote control filmstrip projector. Optional rear projection screen 7" x 9" 120 volts, 200 watts.

*PAL (Programmed Assistance to Learning) is manufactured and marketed by Instructional Industries, Inc. under contract with General Electric Company.

New Programs Coming

- ☐ Math
- ☐ Social Studies
- ☐ Careers
- ☐ Spelling

A



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DEALER:

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GENERAL ELECTRIC

Perceptual Training Series

Project LIFE Perceptual Training Materials consist of programmed filmstrips designed for prelanguage instruction to assist in the 4-6 year old child's development of specific visual perceptual skills. The lack of such skills is directly related to reading difficulties. This series can also be used to remedy identified visual perceptual problems in older children.

Perceptual Training—4 Sets
No. 1010 Complete Series $241.00

Introduce, extend and reinforce perceptual skills including: discrimination, association, geometric forms, word configurations, colors, letters, substitutes, deletions, spatial orientation, shapes, sizes, and figure ground.

Set 1: Introductory and Supplementary.....No. 1011/$69.00

Teaches the child how to respond to the material, provides additional practice for the younger child, and has a criterion test. Also, provides discrimination and association practice in word composition, letter, and word discrimination.

Set 2: Visual Properties No. 1012/$61.00

Provides discrimination and association practice in the visual properties of size, shape and color, with some abstractions.

Set 3: Additions-Omissions and Figure-Ground.....No. 1013/$63.00

Provide discrimination and association practice in determining added and omitted features in pictures. Also, association practice in selecting the relevant material when distracting backgrounds are added to the stimulus pictures, the choices, and finally to all the visuals in the frame.

Set 4: Position-in Space and Spatial Relationships.....No. 1014/$52.00

Provide discrimination and association practice in selecting items, when the foils are inversions, reversals, and rotations and in determining distance and placement.

Perceptual/Thinking Series

Project LIFE Perceptual/Thinking materials include a series of 102 teaching and testing filmstrips separated by levels of increasing difficulty. The lower levels concentrate on specific perceptual/thinking skills that should be acquired during the pre-reading period. When children begin to acquire reading ability, the intermediate and higher levels deal with those skills essential to success at these levels. A test is provided for each set.

Perceptual Thinking (Pre-reading)—6 sets
No. 1030 Complete Series $413.00

Visually oriented, concentrating on memory, sequencing, classification, evaluation and analysis that should be acquired during pre-school years.

Set 1 ..... No. 1031/$73.00

Memory of color, objects, and positions; sequencing by size; picture absurdities; shape classifications and discriminations; and pattern analysis.

Set 2.....No. 1032/$69.00

Maze tracing; picture differences, matching classification, and sequencing; and figural memory and transforms.

Set 3.....No. 1033/$67.00

Memory of objects; picture differences, similarities, and absurdities; analysis; and shape discriminations.

Set 4.....No. 1034/$71.00

Camouflaged numbers; picture matching, classification and sequencing; visual closure; configurations; and visual anomalies.

Set 5.....No. 1035/$68.00

Visual completion; memory of position; conceptual memory; picture rotations; camouflaged numbers; whole/part analogies, and memory of figures.

Set 6.....No. 1036/$70.00

Visual absurdities; picture completion; visual anomalies; set union (shape and color); camouflaged objects and letters; picture to picture completion; puzzle arrangement; and implications and deductions.

Perceptual Thinking (Primary) — 6 sets
No. 1050/$409.00

Visual and verbal mixture of thinking activities in memory classification, word building, evaluation sequencing and inferences that extend earlier skills.

Set 7: Level I.....No. 1051/$74.00

Alphabet matching capitals and lower case letters; memory of patterns; memory of letters and numbers; finding two attributes; memory of signs; memory of picture to language; subclassification, and alphabet sequencing of lower case letters.

Set 8: Level I.....No. 1052/$68.00

Memory of designs (shape and rotation); scrambled words; alphabet sequencing of capital letters; silhouette to language memory; memory of position; and visual/verbal combinations, and conversion.

Set 9: Level II.....No. 1053/$68.00

Shape arrangement; finding three attributes; alphabetizing; scrambled sentences; number sequencing; pair matching; word memory, and simple matrices.

Set 10: Level II.....**No. 1054/$66.00**

Following directions; compounding words; word building analogies; letters and number anomalies; antonyms; word relations; and visual/verbal conversion.

Set 11: Level III.....**No. 1055/$71.00**

Definitions; unscrambling words; word transformations; finding hidden words; figural sequencing; naming word groups; following directions; and memory of letters/numbers.

Set 12: Level III.....**No. 1056/$67.00**

Foreseeing consequences; making inferences; advanced matrices; visual/verbal conversions; number of objects recalled; word classifications; and visual discriminations.

Programmed Language/Reading Series

Level I—9 sets
No. 1070 Complete Series $483.00

The Level I filmstrips present singular and plural nouns, verbs in present progressive forms and past tense, agreement of subject and verb pronouns, and their antecedents, prepositions, possessives, and simple sentence patterns in statement and question form.

Set 1: Self.....**No. 1071/$62.00**

Introduction to verbs in the present progressive form and their use in sentences after five nouns are presented. Plural forms are also introduced.

Set 2: Animals.....**No. 1072/$63.00**

Introduction to specific adjectives and noun determiners as well as additional nouns and verbs. Subject/verb agreement is emphasized and extended to compound subjects.

Set 3: Foods.....**No. 1073/$49.00**

Introduction to additional verbs in the present progressive form and past tense. Presentation of related nouns.

Set 4: Playthings.....**No. 1074/$71.00**

Subject/verb agreement is extended with the verb "to have." Compound objects, cardinal numbers, and colors are introduced. Non-visual frames are used after concepts are established.

Set 5: Activities.....**No. 1075/$44.00**

Introduction to interrogative pronouns and question forms.

Set 6: Self.....**No. 1076/$67.00**

Introduction to predicate adjectives, personal pronouns, antecedents, body parts, and given names.

Set 7: Clothing.....**No. 1077/$41.00**

Introduction to possessives and articles of clothing.

Set 8: Shelter.....**No. 1078/$49.00**

Introduction to prepositions as well as the rooms of a house and furniture.

Holiday I.....**No. 1079/$46.00**

The holidays included in the set are: Christmas 1, Halloween 1, Easter, Valentine's Day, and Birthday Party. These filmstrips are at an interest and reading level of a child in the first grade.

Level II—9 sets
No. 1100 Complete Series $519.00

The filmstrips comprising Level II present additional function words, possessive and object pronouns stressing antecedents, adjectives that describe feelings, imperative mood (request), future tense of verbs, and additional question forms. Level II also utilizes cartoon art, with direct discourse shown visually in speech balloons.

Set 9: School.....**No. 1101/$69.00**

Introduction to possessive pronouns, additional verbs in past tense and present progressive form, more body parts and a function word.

Set 10: Self.....**No. 1102/$53.00**

Introduction to direct discourse using speech balloons, as well as additional verb forms and pronouns. Antecedents of pronouns are stressed.

Set 11: Self.....**No. 1103/$63.00**

Introduction to future tense and imperative mood (request) of verbs as well as additional possessive pronouns, descriptive adjectives, and question forms.

Set 12: Community.....**No. 1104/$67.00**

Introduction to "where" question form, additional verbs, adjectives, and nouns related to playground activities and traffic.

Set 13: Foods.....**No. 1105/$67.00**

Introduction to use of negatives and expressions, additional adjectives, verbs, question forms, and foods.

Set 14: Home.....**No. 1106/$50.00**

Introduction to personal pronouns used as objects, additional verbs and nouns.

Set 15: Home.....**No. 1107/$59.00**

Introduction to "is/are" question forms, idioms, and additional verbs.

Set 16: Clothing.....**No. 1108/$62.00**

Introduction to additional question forms, verbs, descriptive adjectives, and colors.

Holiday II.....**No. 1109/$41.00**

This set of filmstrips includes the holidays; Thanksgiving, Christmas 2, Halloween 2, Fourth of July, and Columbus Day. These informative, child-oriented filmstrips are written at approximately the second-grade reading level.

Level III—9 sets
No. 1120 Complete Series $520.00

The filmstrips comprising Level III present the use of the infinitive, the past progressive form of verbs, the word "going" used as an intention, and additional question forms, verbs, and adjectives.

Set 17: Nature.....**No. 1121/$52.00**

Introduction to weather concepts and clothing requirements for different kinds of weather, as well as a new question form.

Set 18: School.....**No. 1122/$49.00**

Introduction to additional school-related activities.

Set 19: Home/School..**No. 1123/$60.00**

Introduction to the "did" question form, appropriate answers to "did" and "what did" questions, and additional verb forms.

Set 20: Self ..... **No. 1124/$63.00**

Introduction to "how many" question form, as well as the concepts of seeing, looking, and getting ready.

Set 21: Community ..... **No. 1125/$65.00**

Introduction to "was/were" question forms, the infinitive, community activities and workers.

Set 22: Home ..... **No. 1126/$62.00**

Introduction to "can," "cannot," the adverbials "inside" and "outside," additional verb forms and adjectives.

Set 23: Nature ..... **No. 1127/$68.00**

Introduction to the "when" question form, time concepts and seasonal activities.

Set 24: Home/School .. **No. 1128/$63.00**

Introduction to the past progressive form of verbs and the word "going" used as intention. Verb tenses, with and without visual clauses, are reviewed.

Holiday III ..... **No. 1129/$50.00**

Written at the third to fourth grade reading level. This set includes the holidays: Labor Day, Memorial Day, Veteran's Day, Washington's Birthday, Lincoln's Birthday, and Martin Luther King, Jr.'s Birthday.

Level IV—9 sets
No. 1140 Complete Series $579.00

The Level IV filmstrips present adverbs, pronouns, compound sentences, parallel sentence construction and indefinite pronouns, with a social study theme.

Set 25: Nature/Ecology
No. 1141 $69.00

Adverbs of place, reflexive pronouns, compound sentences, and additional noun determiners are introduced. Word order of prenominal modifiers is stressed. The use of the determiners a, an, and the is extended.

Set 26: School Projects/Fair
No. 1142 $65.00

Changing direct discourse to indirect discourse is presented as well as the concepts of sameness and differences. The use of partitives and the comparison of adjectives is introduced.

Set 27: Life in the United States
No. 1143 $68.00

These filmstrips contrast community life and transportation at present, in the early 1900's and in pioneer days. They present additional adverbials of time, of place, of manner, and of means. How and Why question forms, adjectives formed by adding ful to nouns, the idiomatic used to and subordinate clauses beginning with because.

Set 28: North America
No. 1144 $63.00

The which question form, gerunds, parallel sentence construction, and indefinite pronouns are introduced as the student travels to Florida, Washington, D.C., some of the national parks, Canada, and Mexico.

Set 29: Safety ..... **No. 1145/$68.00**

The adverbials sometimes, always, never, usually are presented as well as subject/verb agreement of collective nouns. Basic safety practices at home, at play, to and from school, on bikes, in or around cars.

Set 30. Energy ..... **No. 1146/$67.00**

The meaning and kinds of energy are introduced. Various sources of energy: muscle power, electrical and nuclear energy, energy from water, wind, wood, coal and petroleum products and their uses.

Set 31: Transportation No. 1147/$67.00

The history of transportation from early man to the present day, with special emphasis given to water, air, and land transportation and their impact in the growth of the United States.

Set 32: Communication
No. 1148/$65.00

The meaning of communication, the various modes of communication, and their importance in the lives of all people are presented.

Holiday IV ..... **No. 1149/$60.00**

The filmstrips discuss topics related to Flag Day, New Year's Day, Dominion Day, Hanukkah, April Fool's Day, Ground Hog Day, St. Patrick's Day and Mother's/Father's Day. A test is included as part of each filmstrip.

Supporting Materials

Many new supporting components are constantly being developed and released. These consist of exciting reading and visual series, designed to augment and provide new reading experiences to the LIFE program.

Instruction Manual ..... **No. 2500/$25.00**

The instruction manual is a comprehensive information package which allows you to get maximum use from the Project LIFE materials and advance each child and/or group at the fastest possible pace. It explains the role of core materials and the rationale and basis for the educational concepts behind the Project LIFE system, with references and correlation to sources of information.

Student Funbooks ..... **No. 2600/$10.50**

Project LIFE has developed six (6) books to supplement and complement the language introduced in the LIFE programmed filmstrips. The books, sixty pages each, provide meaningful practice in discrimination and writing the vocabulary and language concepts of the programmed materials.

Project LIFE Holidayland — 21 Filmstrips ..... **No. 2320/$169.00**

Holiday, intended for small or large group instruction, is written at the third to fourth grade reading levels. The innovative and exciting child-oriented series provides an excellent overview and reading experience for twenty-one major holidays as they fall throughout the year.

Project LIFE Storyland — 28 Filmstrips ..... **No. 2310/$225.00**

Storyland is an exciting reading series in full color, ranging in reading levels from grade 2.5 through 4.5 and in interest levels from second grade through fifth grade. The stories in this motivational component are classified as fantasy, legend or true. The filmstrips are designed for multiple utilization in a large group setting with a small group, or for individualized instruction.

My LIFE Pictionary-Verbs
No. 2405/$4.00

The book, "My LIFE Pictionary-Verbs" Pictorially presents 125 verbs in the future, present progressive, and past tenses. This reference and resource book for elementary students is colorful, child-oriented and visually meaningful.

My LIFE Pictionary-Multiple Meanings ..... **No. 2410/$4.00**

"My LIFE Pictionary—Multiple Meanings" is a reference and resource book for elementary students. It contains over one hundred words that have several common but different meanings. Each word is used in approximately five (5) different sentences—each illustrating how the word may be used differently.

Student Progress Records
No. 2110/$ .50

GENERAL ELECTRIC/PROJECT LIFE
Order Form
JUNE 10, 1974

Catalog Number	Equipment	Price	Quantity	Total
4000	PAL System (Self-contained)	$399.00		
4001	PAL Dust Cover	5.50		
4002	PAL Lamps GE CDS/CDX (100 watts)	4.90		
4003	CBJ/CBC (75 watts)	4.70		
5000	Student Response Prog. Master Mod II	248.00		
5001	SRPM Rear Projection Screen	15.00		
	SRPM Connector Cords: (indicate model used below)	9.75		

- ☐ 5002 1. Bell & Howell, 745 C (Round Plug)
- ☐ 5003 2. Dukane, all remote units, Graflex SM750R, Compact, School master
- ☐ 5004 3. Standard 333RC, 666RC, 1001 RP, Kalart Victor – all remote units
- ☐ 5005 4. Kodak – all remote control, Ektagraphic and Carousel series
- ☐ 5006 5. Viewlex – all remote units not listed elsewhere.
- ☐ 5007 6. Graflex SM400RC, SM1000RC, Bell and Howell 745C (rectangular plug)
- ☐ 5008 7. Viewlex V27R and V83R
- ☐ 5009 8. Standard 750 Auto
- ☐ 5010 9. Kodak MFS-8
- ☐ 5011 10. 10, Viewlex V8R

Catalog Number		Programmed Filmstrips	Price	Quantity	Total
1010		Perceptual Training Series (Pre-Reading)	$241.00		
1011	(Set 1)	Introductory & Supplementary	69.00		
1012	(Set 2)	Visual Properties	61.00		
1013	(Set 3)	Additions-Omiss. & Fig.-Ground	63.00		
1014	(Set 4)	Position-in-Space & Spatial Rel.	52.00		
1030		Percept./Thinking Activity Series (Pre-Reading)	$413.00		
1031	(Set 1)		73.00		
1032	(Set 2)	Non-verbal activities in memory,	69.00		
1033	(Set 3)	sequencing, classification,	67.00		
1034	(Set 4)	evaluation and analogies	71.00		
1035	(Set 5)		68.00		
1036	(Set 6)		70.00		
1050		Percept./Thinking Activity Series (Primary)	$409.00		
1051	(Set 7)		74.00		
1052	(Set 8)	Verbal and non-verbal activities	68.00		
1053	(Set 9)	in memory, classification, word	68.00		
1054	(Set 10)	building, evaluation, sequencing	66.00		
1055	(Set 11)	and inferences. (Reading Activities)	71.00		
1056	(Set 12)		67.00		
1070		Language/Reading Series (Level I)	$483.00		
1071	(Set 1)	Self	62.00		
1072	(Set 2)	Animals	63.00		
1073	(Set 3)	Foods	49.00		
1074	(Set 4)	Playthings	71.00		
1075	(Set 5)	Activities	44.00		
1076	(Set 6)	Self	67.00		
1077	(Set 7)	Clothing	41.00		
1078	(Set 8)	Shelter	49.00		
1079		Holiday I	46.00		
1100		Language/Reading Series (Level II)	$519.00		
1101	(Set 9)	School	69.00		
1102	(Set 10)	Self	53.00		
1103	(Set 11)	Self	63.00		
1104	(Set 12)	Community	67.00		
1105	(Set 13)	Foods	67.00		
1106	(Set 14)	Home	50.00		
1107	(Set 15)	Home	59.00		
1108	(Set 16)	Clothing	62.00		
1109		Holiday II	41.00		

Dealer:

GENERAL ELECTRIC

Catalog Number		Programmed Filmstrips	Price	Quantity	Total
1120		**Language/Reading Series (Level III)**	$520.00		
1121	(Set 17)	Nature	52.00		
1122	(Set 18)	School	49.00		
1123	(Set 19)	Home/School	60.00		
1124	(Set 20)	Self	63.00		
1125	(Set 21)	Community	65.00		
1126	(Set 22)	Home	62.00		
1127	(Set 23)	Nature	68.00		
1128	(Set 24)	Home/School	63.00		
1129		Holiday III	50.00		
1140		**Language/Reading Series (Level IV)**	$579.00		
1141	(Set 25)	Nature/Ecology	69.00		
1142	(Set 26)	School Projects/Fair	65.00		
1143	(Set 27)	Life in the United States	68.00		
1144	(Set 28)	North America	63.00		
1145	(Set 29)	Safety	68.00		
1146	(Set 30)	Energy	67.00		
1147	(Set 31)	Transportation	67.00		
1148	(Set 32)	Communication	65.00		
1149		Holiday IV	60.00		

Catalog Number	Reading Experience Filmstrips (Non Programmed)	Price		
2310	Storyland Series (with Teachers Guide)	$225.00		
2311	Part I	83.00		
2312	Part II	79.00		
2313	Part III	67.00		
2314	Storyland Teachers Guide	1.50		
2320	Holidayland Series (with Teachers Guide)	$169.00		
2321	Part I	55.00		
2322	Part II	54.00		
2323	Part III	55.00		
2324	Holidayland Teachers Guide	1.50		

Catalog Number	Supporting Materials	Price		
2500	Instruction Manual Comprehensive operational manual covering complete program	$ 25.00		
2410	**My LIFE Pictionary – Multiple Meanings**	4.00		
2405	**My LIFE Pictionary – Verbs**	4.00		
2600	Student Funbooks Complete Set	10.50		
2610	Student Funbook Level IA } For use with Language Level I	1.75		
2611	Student Funbook Level IB } For use with Language Level I	1.75		
2620	Student Funbook Level IIA } For use with Language Level II	1.75		
2621	Student Funbook Level IIB } For use with Language Level II	1.75		
2630	Student Funbook Level IIIA } For use with Language Level III	1.75		
2631	Student Funbook Level IIIB } For use with Language Level III	1.75		
2015	The Bears Story Book } For use with Language Level I Sets 1, 2, 3, 4 respectively	$ 1.00		
2016	Flying Story Book } For use with Language Level I Sets 1, 2, 3, 4 respectively	1.00		
2017	The Race Story Book } For use with Language Level I Sets 1, 2, 3, 4 respectively	1.00		
2018	The Parade Story Book } For use with Language Level I Sets 1, 2, 3, 4 respectively	1.00		
2110	Student Progress Records	$ .50		
2220	Kids Love LIFE Buttons	$ 9.00 per 100		

(Replacement Filmstrips $6.00)

SUB-TOTAL _____

TOTAL (incl. State and Local Tax if any _____) _____

SHIP TO: _____ Name _____ School _____ Address

If billing address is different, please indicate below. _____ City _____ State _____ Zip

All orders shipped F.O.B. Warehouse.
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